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Export Tour de Force

THE first of a series of Government Ministers who will address the country on the importance of the export drive—Mr. Harold Macmillan, the Prime Minister—exhorted 400 businessmen last Monday to convince their colleagues that exporting, as well as being profitable, can be fun. Mr. Macmillan has apparently found this out from the Germans, who have coined a word—*Exportfreudigkeit*—roughly translatable as "export joy." It is true that the tinkle of the cash-register is one of life's pleasures to the man behind the counter, but it is unlikely that Mr. Macmillan or any subsequent exhorter, however eminent in his field, will materially affect the balance of trade simply by pointing out that it wobbles. Practical advice and, if need be, help is required of the kind offered by U.K.R.A.S. — the United Kingdom Railway Advisory Service — which not only stresses the need to sell abroad, but puts forward the means through which this can be done. A good deal more assistance can be given by the Government to operations of this kind, as has been done so successfully by the foreign administrations. The Governments of Continental countries, in particular, are very zealous in the support of their nationals in the export field—in the railway markets especially they take care to provide a valuable and consistent home demand which greatly strengthens the competitive power of a wide range of industries when these are seeking orders abroad. Facts are being faced by the Federation of British Industries, which is holding a series of small round-table conferences throughout the country at which "a new boy can be instructed by experienced people in all fields." Meanwhile, a spokesman for the National Union of Manufacturers has said: "The Government for its part offers continued assistance and advice but no tangible incentive," and everyone awaits the formation by the Government of further advisory councils such as that on the Middle East. Mr. Macmillan mentioned the assistance available to manufacturers through the Board of Trade offices, and urged manufacturers to make full use of the facilities offered. Rather surprisingly, he does not appear to have mentioned the Government's commercial officers in overseas territories to whom Lord Rootes, Chairman of the Dollar Exports Council, made such flattering reference at the end of last month: he also passed no tips from successful fun-loving industrialists.

Sir Francis Dunnell

THE death at the age of 91 of Sir Francis Dunnell, formerly Railway & Canal Commissioner, and Chief Legal Adviser, London & North Eastern Railway from 1923 to 1928, brings to a close a lifetime of railway service dating back to 1891, when he joined the Solicitor's Department of the former North Eastern Railway. He became Secretary of the N.E.R. when he was only 38 years old. During the 1914-18 war, when his services were put at the disposal of the Government, he was Secretary to the Naval Mission to the U.S.A. led by Sir Eric Geddes, himself a former Deputy General Manager of the N.E.R. He was appointed the first Secretary & Solicitor to the newly-formed Ministry of Transport in 1919-21, in which position he was engaged on the preparation and carrying through Parliament of the Railways Act of 1921. His wide experience and abilities led to his appointment in 1923, shortly after his return to railway service, as Chief Legal Adviser & Solicitor of the L.N.E.R. In 1928, after his retirement, he was recalled to public service as Railway & Canal Commissioner. With his pleasant personality, tact, and adaptable mind, he made a success of every one of the many appointments he filled.

Mr. F. R. E. Davis

AN association with the only railway to retain its identity on grouping in 1923 has ended with the death last week of Mr. F. R. E. Davis. He was Secretary of the Great Western Railway Company from 1926 until his retirement in November, 1947, a few weeks before the G.W.R. became part of the nationalised railway system. The relative importance of any high appointment on a British railway in the past, perhaps even more than now, depended largely on the innate qualities of the holder. Mr. Davis possessed all the qualities necessary not only to fill, but to create a position of vital importance. He was a great Secretary in the tradition of C. A. Saunders, the first Secretary & General Superintendent of the G.W.R., and it was fitting that in 1935, on the occasion of the celebration of the Great Western Railway Company centenary, Mr. Davis conceived the idea of the film which told the story of the company's 100 years of progress. Thus the last Secretary told the story of the first, and of the years between. He was a man of wide interests and many accomplishments, as is apparent from the account in our personal columns.

C.P.R. Industrial Development Reorganisation

IN conformity with the recent reorganisation of the Freight Traffic Department of the Canadian Pacific Railway, to which reference was made in our July 8 issue, and with the changes made in the Operating Department of the system a year ago, the C.P.R. Industrial Development Department has now been re-formed. The work of the Department is to provide industry with current information on plant and warehouse facilities, and the availability of raw materials and natural resources. As with the Freight Traffic Department, the Indus-

trial Development Department has been reorganised on a coast-to-coast basis. The headquarters are at Vancouver, Calgary, Regina, Winnipeg, Toronto, and Montreal. Two Assistant Managers (Industrial) have been appointed; Mr. D. N. Cooper at Toronto, and Mr. A. B. Smith at Winnipeg. Moreover, six Industrial Supervisors have been appointed to expedite the work of the Department across the continent. They are Messrs. J. A. Dunlop, R. Lapalme, L. M. Murray, H. C. Phillips, G. W. Perks, and J. A. Cromarty, at Montreal, Toronto, Winnipeg, Regina, Calgary, and Vancouver respectively. Reference to these appointments occasioned by the change in administrative structure is made in our personal columns.

Proposed Line to Canadian North-West

THE route of the proposed railway from Northern Alberta to the lead-zinc deposits in the Great Slave Lake area has not yet been agreed. Whatever is eventually decided, the new line will be some 400 miles long. The matter is being considered by three commissioners. One of them, Dr. W. D. Gainer, suggests an easterly route from Waterways, Alberta, to Hay River, in the North-West Territories, with connections to the Pine Point mineral area and Fort Smith. Mr. John Anderson-Thomson proposes a westerly route through the area north of Peace River. The Chairman of the commission, Mr. Justice Manning, believes that the position of the mines may be a compelling argument for the eastern route, but that if work on the railway is to start at once, the western route has the advantage of being cheaper to build, and that it can be more easily surveyed. The line presumably will be of standard gauge, and diesel-worked.

British Engineering Products in E.F.T.A. Countries

ACCORDING to the Treasury *Bulletin*, there are good prospects for placing orders for British engineering products in countries which are members of the European Free Trade Association. Great efforts, it is stated, will have to be made to make best use of the opportunities provided in the recent reduction of 20 per cent in tariffs. Between 1956 and 1958, it is stated, Britain's share of this market fell from 19 to 15 per cent, while Western Germany increased its share from 40 to 43 per cent and the Common Market countries as a whole from 52 to 57 per cent. The initial 20 per cent cut in tariffs represents only a small proportion of the total selling price in the low-tariff members of E.F.T.A., but even there, the *Bulletin* points out, buyers will derive some advantage from importing British goods. This, it is stated, should be of interest particularly to "cost-conscious importers of components and other industrial products. Moreover, goodwill between E.F.T.A. countries is itself awakening interest in mutual trade."

A.A.R. Delegation Visit to Europe

ADVANCES in technical research by British Railways, notably in civil engineering, and the high standard achieved in design and execution of engineering work were observed by the delegation from the Association of American Railroads which visited Britain earlier this week. The party was on its way back to the U.S.A. from a tour of railways in Russia and some Western European countries. In Paris it was shown the organisation and work of the International Union of Railways, the European counterpart of the A.A.R. A brief account is given elsewhere in this issue. Like previous visitors from overseas, the delegation was greatly interested in developments in civil engineering in the Western Region. Some of these, including working models of apparatus for detecting movements in three dimensions in long-welded rails and for locating slips in embankments and cuttings, were shown in a compact display, which was open also to the public, in the Great Western Royal Hotel, Paddington. This and a display of films supplemented the information which could be made available in the limited time. The Western Region Engineering Laboratory was the main object of interest. The A.A.R. delegation was the second party of senior railwaymen from overseas in recent weeks, since the visit of officers of the French National Railways, to have inspected, and increased their professional knowledge from, the civil engineering work and research in which British Railways excels.

U.I.C. Board of Management

PROPOSALS for reorganising the work of the International Union of Railways (U.I.C.) were approved by the Board of Management of the Union last month, and the regulations and other measures to implement these are to be submitted for approval at the next meeting in September. Complete standardisation of locomotives, rolling stock, and other railway equipment is to be abandoned, for the time being, as an objective; but standardisation of locomotive components is to be pursued, in co-operation with industry, as an aim of the Union to ensure as great a degree of uniformity and interchangeability as circumstances, including the views of technical staffs of the railways and manufacturers of railway material, allow. There are to be changes in the operations of the Office for Research & Experiments (O.R.E.). The Information Centre of the European Railways (C.I.C.E.) is to be reorganised as the European Railway Information & Publicity Centre (C.I.P.C.E.). The International Documentation Bureau (B.D.C.) is to be modified, and an International Bureau of Railway Films (B.F.C.) is to be established. The foundation stone of the new U.I.C. office in Paris will be laid after the next session of the Board.

British Transport Advertising

IN an address to the International Congress of Outdoor Advertising, Toronto, on July 15, Mr. J. H. Brebner, Public Relations Adviser to the British Transport Commission, outlined the progress made by the public relations organisations in this country, particularly in relation to transport advertising in the United Kingdom. Mr. Brebner maintains that British Transport Advertising provides uniformly efficient service to the customer throughout Britain, paying attention not only to national advertising but equally to local requirements. In some aspects of advertising B.T.A. leads the industry, notably with innovations such as three-dimensional illuminated special sites, illuminated advertising panels on buses, and the outdoor publication of figures showing the breakdown of revenue. Public goodwill has been successfully fostered. Proof of this is the increase in revenue from Commercial Advertising on London Transport road and rail sites. From an annual total of approximately £983,000 in 1946, the current figures are in the region of £3,500,000, a great achievement.

Scope of Advertising on British Railways

A SECOND series of comprehensive figures based on the number of tickets issued and collected at principal British Railways stations over a representative period, has been released by British Transport Advertising, the commercial advertising service of the British Transport Commission. The figures show the number of people using a further selection of British Railways stations each year, and allowance has been made for booking by ticket agents, return tickets issued at stations outside the survey, and season tickets; but the figures do not include passengers changing trains in transit, or people using stations but not travelling. It is clear from the data compiled in this survey that the number of opportunities for travellers to see advertisements displayed in railway stations is enormous. The scope is shown by the highest totals for each Region, for example 16,300,000 journeys a year to and from East Croydon, Southern Region, and 7,400,000 at Southport Chapel Street, London Midland Region. This corroborates Mr. Brebner's insistence on the importance of the contribution by advertising to B.T.C. revenue. One may wonder how far the many enterprises which produce goods for the general public realise the immense potentialities offered.

Helicopters for South African Railways

AERIAL surveys of new lines, inspections, transport of railway officers and medical staff to scenes of accidents, and access to trains stranded by floods or washaways are the reasons for purchase of helicopters by the South African

Railways. This is believed to be the first time that helicopters have been acquired by a railway administration, though they have been borrowed frequently by railways from air forces and similar bodies. Two have been purchased by the S.A.R. for £67,000, and are expected to be in service by the end of the year. Aerial photography will be greatly facilitated, and the use of the helicopters for low aerial inspection of marshalling yards, large station layouts, and harbours will save many hours of inspecting officers' time. The original intention was that the machines be made available to other Government departments such as the police and Departments of Irrigation and of Lands, but it is thought that by the time their potentialities become apparent, they will be needed constantly by the railways and that the other departments will buy their own.

Indian High Capacity Goods Stock

THE Indian Railways high-capacity bogie ore wagon has now been in service for a couple of years and appears to be giving satisfaction. It has a tare weight of only 23 tons but is designed to carry 65 tons of iron ore. Unlike all previous Indian goods stock, which has side buffers and a central screw coupling, it is fitted with the Knuckle type of central buffer-coupler. Although the brakes are of the standard Indian automatic vacuum pattern they are capable of controlling 3,500-ton trains in daily service, and on the recent 6,800-ton test train, worked over 1 in 100 and some 1 in 60 gradients, proved effective with the pusher engine assisting in the air-exhaustion. Diamond-frame bogies are used. One thousand three hundred BOBS wagons are already in service. The other new type is the BOX-type wagon with a 55-ton capacity, and also with Knuckle couplers; its bogies are of the International Union of Railways (U.I.C.) type with laminated springs. On trial it has been found to run well at 60 m.p.h.; 10,000 are, it is said, to be built. Both these wagons have roller-bearing axleboxes. The estimated cost of conversion of all screw-coupled stock to buffer-coupler is some £56,000,000.

Moving Manganese Ore in Equatorial Africa

INTENSIVE movement by rail of manganese ore in the Republic of the Congo (formerly the Middle Congo territory of French Equatorial Africa) is to start this year. The ore will be conveyed from rich deposits in the interior, along the Ogooue River, by cableway for 60 miles to M'Binda, and thence 300 miles by rail to the Atlantic port of Pointe Noire, where storage and loading facilities are being constructed. Traffic at first is expected to amount to 2,000 tons a day, a considerable amount for a single line through dense tropical jungle. The motive power will be 1,320-h.p. diesel-electric locomotives built by International General Electric Company. Seven locomotives have been ordered for the ore traffic by the Compagnie Minière de l'Ogooue, a French mining company formed to develop the deposits. Three of them will be delivered shortly to aid in completion of a 150-mile 3 ft. 6 in. gauge line from the existing Congo-Ocean Railway to M'Binda, near the border between the Republic of the Congo and the Republic of Gaboon.

Signalling Procedure in Bad Weather

AS Brigadier Langley makes clear in his report on the East Ham collision last November, which is summarised elsewhere in this issue, there is a close parallel between this accident and the much worse one at Dagenham East in January, 1958. On each occasion a driver missed a signal in thick fog. In his report on Dagenham East, Brigadier Langley recommended that the rules should be changed to prevent, in bad weather, a signalman from sending a train forward, to await acceptance ahead, unless the signal was a colour-light or equipped with co-acting detonators. This recommendation has had to be applied so as to take account of the conditions at every signalbox concerned. The notification of the change in the regulations reached the signalbox concerned the day after the accident. A further passage of the report illustrates the need for care in making changes. Signalling improvements caused the removal of an annunciator and the installation of a long track circuit, which left the East Ham signalman in doubt as to the whereabouts of the "train in front" and may have contributed to the collision.

By-Produets of Modernisation

OPENING Harlow Town Station on July 13, Mr. H. C. Johnson, O.B.E., General Manager of the Eastern Region of British Railways, quoted the opinion of a foremost British manufacturer—British Insulated Callender's Cables Limited—regarding the value of British railway modernisation. In an advertisement which appeared that morning in *The Times*, the company stated: " . . . the modernisation of British Railways has given British manufacturers valuable practical experience in the most up-to-date forms of traction and is assisting them to obtain export orders in the face of international competition."

The old cry of the railway equipment manufacturer for a shop window is thus seen in a national light, for there have been serious and increasing warnings from leading industrialists and economists to the effect that Britain must narrow her export gap or face disaster. The railway modernisation plan, which appears to be in such grave danger today, is providing more than the most extensive shop window that the manufacturer of railway equipment has ever known: it is playing a vital part in maintaining the solvency of the nation as a whole. This is realised by railwaymen: Mr. Johnson said that professional railwaymen believe that modernisation is sound national policy: that it is not so much the question as to whether the country can afford to have railways but rather whether it can afford not to have them. All the modernisation so far carried out—he spoke particularly of passenger services and electrification—had not only proved successful, but very sound economic, propositions.

It is a well-tried principle that, to continue to function, a business must be a financial success, and Mr. Johnson was right to stress the profitable aspect of modernisation. Nevertheless, there is another, and equally telling, factor to be considered: that of morale. After decades of neglect and discouragement, during which poorly paid railwaymen had somehow to achieve smooth and efficient operation from run-down and in many cases obsolete equipment, British railways are coming into their own. New equipment has been bought and new schemes encouraged: old ways of thought have been eradicated where they have been found wanting and, with difficulty—for old prejudices and fears die hard—a new spirit of enthusiasm has been generated throughout. For this, the British Transport Commission, through its Area Boards and General Managers, has been largely responsible. The task has not been easy: steady and cautious by nature and training, railwaymen are not easily weaned from known and trusted ways. Great tact has had to be exercised and, in some cases, the introduction of new methods has led to disappointment and even bitterness in the individual. In others—even where there has been no real or imagined hardship—conservatism has proved a rugged opponent to progress.

Today, patient tenacity in great measure has resolved these difficulties arising from the human element in railway work—without which there could be no railways at all. There is a renaissance of enthusiastic creativity not unlike that which followed the bitterness and upheavals of the Industrial Revolution. Always at heart the enthusiast, the railwayman is savouring the fruits of modern science as applied to his profession. At last, after years of Cinderella-like existence, he knows his worth is appreciated by the public at large. No longer restrained, but upheld by tradition, he is beginning to see his most advanced ideas take concrete shape.

It is at this juncture that the Government which, following the custom of its predecessors, uses the transport system as a political springboard, chooses to throw its biggest spanner into the intricate machinery of human relationships. It does not simply stop the progress now in hand: it appoints a Star Chamber to work in secrecy over an unspecified period, each day of which grows longer with the waiting, while every man and woman of the entire transport body politic watches its hardly won and short-lived enthusiasm die the death. It is now more or less taken for granted all over the system that, when word at last comes, it will be the negative Thou Shalt Not of the Old Testament. Anger is rising everywhere, for even the dullest among us can see that an abrupt halt to modernisation will be quickly succeeded by blame for railwaymen for what will seem to have been a futility of financial waste. Railway modernisation is a cumulative process: electrification and improvement of track, bridges, and signalling

must be followed by the acquisition of new motive power and rolling-stock; these must be accommodated in sheds and dealt with in marshalling yards and stations of equivalent standards; it is an economic proposition to improve stations and refreshment facilities if there is the public to use them—but stop the process anywhere along the chain and things are actually worse than they were before improvement began. Then, at least, ways and means had been found to make do with existing equipment, and the public had not developed an extravagant concept as to what "a national service" should provide.

The Brahmaputra Bridge

THE principal link between the railway system in Assam and that of the rest of India is the metre-gauge route *via* Gauhati on the Brahmaputra River. In British Indian times the part of the route coming eastwards from Bengal and on the north or right bank of that river was owned and worked by the Eastern Bengal (State) and, later, Bengal & Assam Railway, and that to the south of the river was the Assam Bengal Railway also state owned but worked by a company. The two parts were, and still are, connected by a wagon-ferry working between Amingaon on the north, and Pandu on the south bank, a few miles west of Gauhati. The high cost and obstacles to efficient operation inseparable from the ferry always suggested its ultimate replacement by a bridge.

It was realised that an almost-ideal site for such a bridge was near the existing ferry where this great river flows through a defile. Though proposals to construct a bridge were made from time to time, it was not until 1933 that detailed estimates for one at that site were prepared. Moreover, in 1937-39, the Central Irrigation & Hydrodynamic Research Station at Poona studied the problem and confirmed the suitability of the site. Nevertheless, no action was taken until 1943, when war transport requirements demanded the construction of a bridge. It was soon realised that it could not be completed in time to be of any use during the war; instead, the capacity of the ferry was increased to meet immediate military needs.

Meanwhile, in 1942, serious floods occurred in the Manas River flowing into the Brahmaputra some 70 miles below Amingaon; they caused prolonged interruption of traffic on the Bongaigaon–Amingaon section of the railway. This threat to the approach to the Amingaon bridge site threw doubt on its advisability. As a result another possible site below the influx of the Manas was investigated in detail. A bridge there was found to be feasible, but could be built only at prohibitive cost because of the extensive river training works involved, whereas none are necessary at the Amingaon site. Furthermore, the Assam Rail Link Stabilisation Committee in 1956 pronounced the railway across the Manas Basin capable of stabilisation to a reasonable standard. All things considered, it was decided to construct the bridge at Amingaon. A preliminary description of this major work is the subject of an article in this issue.

Indian Railways in 1958-59

A COPY of the Indian Railways Administration Report for the year ended March 31, 1959, has been sent us by Mr. Karnail Singh, Chairman of the Railway Board. From the operating and financial points of view the year was one of steady improvement rather than of record-making as in some previous years. The route-mileage of all railways in India on the above date was 35,081, of which 34,636 miles were Government-worked; the remaining 445 miles were small narrow-gauge lines privately owned and operated. The total route-mileage in March, 1958, had been 34,889, but 192 miles—the total of eight new sections of line—were completed and opened for traffic during the intervening year.

The gross earnings of all railways during 1958–59 totalled Rs. 392·33 crores (£294,247,500), roughly Rs. 10 crores (£7,500,000) more than in the previous year. Three records were achieved, namely the number of passengers originating, the tonnage of goods traffic originating, and the total ton-mileage. Though the number of passengers increased, gross passenger earnings decreased by 2·06 per cent during the year, but gross earnings from goods traffic increased by 5·02 per cent.

During the autumn of 1958 a loan of $85,000,000 was received from the World Bank to pay for rolling stock, other equipment, and materials required for the railways. Two other loans of $40,000,000 and $35,000,000, or equivalents in other currencies, were sanctioned by the U.S.A. Development Loan Fund for railway modernisation and expansion. During the year 660 wagons and 12 broad-gauge railcars were received from Australia under the Colombo Plan. Also permanent way materials to the value of about Rs. 4 crores (£3,000,000) were received under the Technical Co-operation Mission Aid of the U.S.A.

The principal results of working all Indian railways during the years ended March 31, 1958 and 1959, were:—

	1957–58	1958–59	Percentage variation
Passengers originating (millions)	1,430·3*	1,440·9	0·74+
Passenger-miles (millions)	43,328·5*	42,500·8	1·91−
Passenger earnings (Rs. crores)	120·05	117.57	2·06−
Average passenger journey (miles)	30·3	29·5	2·64−
Freight tons carried (millions)	133·7*	136·1	1·80+
Net ton-miles (millions)	45,644	46,752	2·43+
Goods earnings (Rs. crores)	225·71	237·04	5·02+
Average miles a ton of goods was carried	379·4*	384·7	1·40+

* Revised figures

The position on the Government Railways—including lines worked by Government on behalf of other owners—was very similar. Although the number of passengers originating increased from 1,410 million to 1,422 million, passenger-miles declined from 43,043 million to 42,259 million, a decline entirely in second- and third-class ordinary non-suburban traffic. This was due in part to the gradual withdrawal of second-class accommodation with a view to reducing the number of classes, and partly to reduction in the average miles travelled by a passenger. There was an increase in total goods traffic expressed in net ton-miles of 2·41 per cent, also of 1·34 per cent and 2·78 per cent in the numbers of 5 ft. 6 in. and metre-gauge wagons respectively loaded. Net ton-miles per wagon-day fell by 25 and nine on broad- and metre-gauge systems respectively.

Government Railways gross traffic receipts totalled Rs. 390·21 (Rs. 379·78) crores, an increase of Rs. 10·43 crores. The corresponding working expenses amounted to Rs. 276·33 (264·18) crores, the figures in brackets in each case being those for the previous year. After contribution of Rs. 45·87 crores to depreciation fund and payments to worked lines, the net revenue for the year under review was Rs. 59·32 (Rs. 57·78) crores. The dividend paid to general revenues was Rs. 50·39 (44·40) crores, leaving Rs. 8·93 crores (as against Rs. 13·38 crores in 1957–58) surplus; this reduction was caused by a Rs. 5·99-crores higher contribution to general revenues. The increase in working expenses of 13·47 per cent was due mainly to cost of additional staff, enhanced annual increments and allowances, and higher cost of repairs to bridges, track, buildings and rolling stock resulting from expansion of railway assets.

During the year eight new sections of line were opened for traffic aggregating 191 miles in length; another 544 miles were either under construction or sanctioned. No lines were closed. The longest section completed was the electrified 53-mile Bhilai–Dhalli–Rajhara branch to carry iron ore to the steelworks at Bhilai; its estimated cost was Rs. 4·38 crores. New marshalling yards at Bhilai and at Bondamunda near Rourkela steelworks were undertaken. The greatest work completed during the year was the Mokameh Ganges Bridge, over which the first material train ran on February 23, 1959. Preliminary work was also begun on the Brahmaputra Bridge in Assam. Good progress was made on the Khandwa–Hingoli link between the northern and southern metre-gauge systems, including the 1,037-ft. Talai Tunnel.

The following locomotives and rolling stock were (*a*) placed in service, and (*b*) ordered during 1958–59:—

	5 ft. 6 in.	Metre	Narrow	Total
Locomotives—				
(*a*) Placed on line	269	96	6	371
(*b*) Ordered	127	100	2	229
Coaching vehicles—				
(*a*) Placed on line	1,032	683	25	1,740
(*b*) Ordered	530	503	—	1,033
Wagon stock*—				
(*a*) Placed on line	13,797	2,904	—	16,701
(*b*) Ordered	16,626	711	—	17,337

* The wagons are in terms of four-wheel stock. In the following paragraphs b.g. = 5 ft. 6 in. gauge, m.g. = metre gauge, and n.g. = narrow gauge.

Of the 127 b.g. engines, 120 were " WG" class ordered from Chittaranjan Works, the remaining seven being imported shunters. The 100 m.g. were " YGs " built by Tatas. The 1,032 b.g. coaching vehicles included 83 imported M.U. electric coaches and 12 railcars. The coaches ordered were all from Indian shops. Of the wagons ordered, 3,516 units represented 1,758 80-gross-ton bogie " BOX "-type open wagons, and 472 units were 236 " BOBS "-type bogie hopper wagons of 90 gross tons, both types having central buffer-couplers and roller-bearing axleboxes.

By March, 1959, there were 137 b.g., 26 m.g. and 8 n.g. diesel locomotives in service, and orders had been placed for 16 more b.g., nine main line and seven shunting locomotives. Of the above 137 b.g. diesels 91 main-line engines were hauling high-capacity wagons in train-loads of up to 3,200 gross tons compared with 1,800-ton trains previously steam-hauled. Unlike b.g. wagon stock, comparatively few m.g. wagons were previously vacuum-braked, but rate of equipment was speeded up and the bulk of the m.g. stock has since been vacuum-fitted. During the year the design was finalised for an interesting new type of b.g. tank engine, the " WT " 2-8-4 type; 10 of these engines were being or expected to be built at Chittaranjan.

During the year progress in electrification was expedited. In the Calcutta suburban area the 3,000-V., d.c. installation reached the end of a stage with the completion of the Howrah-Burdwan main line and the Tarakeshawar branch. The number of Eastern Railway Suburban trains in and out of Howrah increased from 66 (steam) in 1956–57 to 110 (electric) in 1958–59. Preliminary work in the installation of the 25 kV., a.c. system on the Eastern and South Eastern Railways was well in hand. The 100 electric locomotives ordered from Europe and 10 from Japan were progressing satisfactorily.

Damage due to heavy rain, floods, and cyclones during 1958–59 was not abnormal. There were five major accidents during the year, the same number as in 1957–58, but casualties were fewer.

The Burma Railways in 1957-58

THE report of the Burma Railways for the year ended September 30, 1958, which we have recently received from Tun Thwin, Commissioner for Railways, records gross earnings K.900.54 lakhs, an improvement of K.33 lakhs on 1956–57. This is the first time earnings have exceeded 9 crores, and is the more noteworthy as it has been achieved despite continued insurgent activity.

Working expenses, including depreciation and interest charges, were K.834 lakhs, leaving a net profit of K.67 lakhs, or K.48 lakhs more than a year earlier. The Commissioner states that had the Railway Administration received the claim made for unremunerative lines, as stated in the previous annual report, from the Union Government of Burma, the profit would have been much increased. In 1957–58 goods earnings decreased K.8 lakhs, while coaching earnings went up by K.41 lakhs.

Important events during the year were inauguration of the first diesel express service Shweman-Lwin and Dagon Lwin to carry passengers and parcels from Rangoon to Mandalay in 13 hours during the day, instead of almost 48 hours previously with two overnight stops. There was a general speeding up of train schedules, and other improved services included through trains from Mandalay to Lashio, Mandalay to Myitkyina, and Thazi to Shwenyaung. Night running of trains was resumed, and the circular railway on the local suburban line was opened to the public on May 1, 1959. Total route mileage in operation was 1,848, against 1,818 a year previously.

Coaching earnings, which were about 3½ times those of pre-war, reflected the higher number of passenger trains and renewal of public confidence in rail transport. Suburban traffic continued to increase and should expand further as new developments are planned.

Goods tonnage reached a post-war peak of 2,765,285 tons, despite intensified road-river competition, particularly in the carriage of fresh fruit and vegetables from the Shan States and problems caused by flood and sabotage. Revenue, however, was K.8 lakhs lower because more low value departmental freight was carried and shorter distance public traffic.

Coaching stock put into service comprised 19 coaches built in the Myitnge workshops, 95 corridor coaches from Japan, and nine from Germany. Despite these additions, there were still acute shortages of ordinary class passenger coaches for local mixed trains on various branches.

The report highlights the progressive decrease in sabotage. In 1957–58 there were only 59 incidents (including 23 cases of track sabotage), compared with 145 in 1956–57 and 305 in 1955–56. The number of bridges damaged in 1957–58 was halved at 51. Steady progress was made in restoration of lines and other assets damaged during the war and by sabotage. In particular, main-line track was noticeably improved, allowing through running of high-speed diesel trains. The diesel engine shed in Rangoon Station Yard was completed. The six diesel-electric locomotives ordered from France were put into service on the main line. The total number of staff and employees at the end of the year was 21,812, against 21,597 at September 30, 1957.

Work Study in Track Relaying

TRACK relaying in the Western Region, British Railways, is now being carried out in seven of the ten districts under " Payment-by-Results " (P.B.R.) schemes adopted following Work Study of the operations involved. This has enabled the normal strength of each relaying gang to be reduced from 25 to 19 men, with a corresponding reduction in cost per 1,000 " allowed minutes " of some 27 per cent and an increase in output of 40 per cent.

Programmes of work for each gang prepared in advance after a study of the site by the District Engineer's staff are issued on a daily basis for a month at a time. The work includes both plain-line and crossing work renewals, and the allowed times are based on a 60-ft. length of plain line and per timber for crossing work. The times allowed vary for different materials used and include allowances for getting to and from work-site, interruptions for passing trains, and—where several small teams are working on different parts of the same job simultaneously—for lack of synchronisation between the teams.

The resulting allowed times for each phase of the job are detailed on a job sheet given to the Permanent Way Inspector and the re-laying ganger concerned. The men are paid a bonus based on the total allowed time for the job divided by the total man-hours actually expended, and most gangs are able to earn about £2 a week bonus. During mid-week periods re-laying work in sidings or on branch lines or other authorised work is carried out so as to occupy the gangs fully. The extension of the scheme to the remaining districts is proceeding.

Tubular Construction of Lightweight Stock

WHEN considering factors which influence the emergency impact behaviour of a passenger coach it seems inadvisable to concentrate too much energy-absorbing structure at one point. Bearing in mind the tendency towards using a single central buffer at each coach end, to overlook this observation would aggravate the natural lateral instability of a train of coaches in compression and perhaps influence, in another form, the tendency of coaches built to current designs with heavy underframes and light superstructures, to override each other. It would seem better to spread the energy-absorbing structure both laterally and vertically and to make the end of each coach more like a uniform plastic sponge than a hard-snouted one.

The foregoing is suggested in a paper, " The crumpling of tubular structures under impact conditions," read by Professor Sir Alfred Pugsley at the symposium on aluminium held in London jointly by the Institution of Locomotive Engineers and the Aluminium Development Association on May 27, and to which reference was made in several recent issues. Experiments to show the behaviour of thin-wall tubes of various types with and without reinforcement, representing integral coach structures under crushing loads applied both statically and dynamically, have been carried out in Bristol University on behalf of the British Transport Commission and the Aluminium Development Corporation in the interests of improving the safety of both railway and road vehicles. One of the outstanding revelations is that buckling in both circular- and square-section thin-wall tubes under dynamic loading always started at an end, and at high speeds it was largely confined to that part of the specimen. This makes it obvious that for a given initial failing-compressive load, a tubular structure can absorb more collision energy for a given shortening

than does a conventional railway-coach structure in which the longitudinal strength resides mainly in a heavy underframe.

In practice the precautionary measure might be taken of making the coach structure a monocoque tubular one with little concentration of end-wise strength at floor level, and arranging the ends so that when the buffers are fully closed they effectively withdraw to allow the coach ends to butt against one another around a large part of their periphery. Withdrawal could be by deliberately setting a buffer-support-collapse load, preferably plastic, or by ensuring withdrawal by an elastic buckling of the buffer support.

Before giving effect to such a suggestion it is necessary to consider the values of the initial-failing and steady-crumpling loads that might be chosen for the coach structure. The experiments have shown that if the customary 200 tons initial-static-collapse load should be allowed for in the design of a tubular structure the steady resistance to crumpling, once collapse had been initiated, would be perhaps about 50 tons. Sir Alfred Pugsley points out that this raises doubts as to the value of the specification of such a high initial load. If the buffer-collapse load were over the 50 tons, under impact conditions local damage might ensue that would vitiate the 50 tons resistance itself. A buffer-withdrawal load of 25 tons might seem more appropriate and this, on a 40-ton coach, would correspond to an acceleration or deceleration of rather over $\frac{1}{2}$ g., sufficient to cover normal impacts which occur in service.

It might be argued that three design loads for longitudinal compression should be specified as follow: (1) Buffer-withdrawal or collapse load P_1 to cover service impacts, say, corresponding to about $\frac{1}{2}$ g.; (2) Coach crumpling load P_2 to provide energy absorbtion by end damage along, say, 10 per cent of coach length, P_2 to be chosen to provide decelerations of up to 4 g. and to be not less than, say, $2P_1$; (3) Coach static strength P_3 to be not less than, say, $2P_2$. For the fuller understanding of coach crash-behaviour it is suggested that tests should be made to measure the values of P_1, P_2, and P_3 (particularly P_2), for several different types of coach as now in service and as projected. If this cannot be done full-scale it could be determined by tests on large-scale models.

It was the intention during the tests at Bristol to endeavour to absorb energy by plastic deformation rather than by tearing because it was thought that the former would be more effective. For the metals tested so far the desired result seems to occur naturally, the metal tending to fold rather than to tear, except in the regions of sharp corners. It has since been found from subsidiary tests that the work required is of the same order for both tearing and folding. Therefore, on energy-absorbtion grounds, there is little point in preferring folding, but the preference may remain valid on the grounds of reducing injury to staff and, perhaps, any influence associated with the duration of the impact.

A Query About Railway Freight Development

(By a correspondent)

THE fifth four-week period of the year used to be a time for heavy wagon loading. In each of the five years from 1952 to 1956 forwardings exceeded 22 million tons, with a peak above 23 million in 1953. As the period was clear of public holidays this year and industry was producing goods freely, a freight train traffic of 19,309,000 tons was disappointingly low. An increase of 1,541,000 tons, or 8·7 per cent on 1959 looks well on paper, but that was the poorest year for freight business in recent railway history. Compared with 1953 there was a decrease in 1960 of about 3,816,000 tons, or 16·5 per cent, merchandise being down 681,000 tons (17 per cent), minerals 328,000 tons (6·5 per cent) and coal no less than 2,807,000 tons (nearly 20 per cent).

Ton mile figures confirm the record of declining freight business. In the May period this year, the railways worked 1,447 million ton miles, an increase on 1959 of 113 million, or 8·5 per cent. The comparison is of little significance because ton mileage in the first half of 1959 was down 8 per cent from 1958, when 10 per cent fewer ton miles were worked than in 1957. Freight traffic movement in May, 1960, was about 20 per cent below the 1953 level.

The trend of freight train receipts is also disquieting. For the May period these were £525,000, or 2·6 per cent, more than in the lean time of 1959, when receipts were about £3,356,000, or 15 per cent, below 1958. There is a tendency for the railways to give more service for less reward at a time when advances in salaries and wages will increase handling costs. Merchandise receipts in May were 3 per cent over 1959, while a rise of 1 per cent in tonnage led to the working of 9 per cent more merchandise ton miles. In 1959 the average receipt from a ton of merchandise fell by 6·5 per cent to £2 6s. 9d., compared with 1958, though the average haul was 2·8 miles longer. For all traffic last year's receipt per ton mile was 3·27 pence against 3·37 pence in 1958 and 3·32 in 1957.

The 1959 report of the British Transport Commission refers to "encouraging progress" made by the railways in securing a larger share of general merchandise traffic. The progress amounted to an increase in 1959 forwardings of 835,000 tons, or 2·3 per cent, with a fall in receipts of £3,919,000, or 4·3 per cent. The disproportion between tonnage and receipts continues in 1960. In 20 weeks to May 22, the quantity of merchandise (including livestock) put on rail was 1,469,000 tons, 10 per cent more than in 1959, but receipts were merely 3·3 per cent higher. In these 20 weeks the total quantity of all traffics advanced by 6,403,000 tons, 6·9 per cent, while the rise in receipts was only £1,897,000, or 1·8 per cent.

The Commission's report states that the utmost advantage is being taken of the freedom in rate-making now in vogue. Unless this freedom is used discreetly, it may end in sacrificing too much of the profits from freight train traffic, which in past years were the main prop of railway finance.

Letters to the Editor

(The Editor is not responsible for opinions of correspondents)

British Railways Relic for Melbourne

July 1

SIR,—In the Scrap Heap of March 11 reference is made to the gift by Mr. Chalmers Kearney of a granite sleeper block from the Surrey Iron Railway to the Museum of Applied Science in Melbourne, and it is stated that the first railway in Australia was built from Geelong to Melbourne.

As one very much interested in early Australian railway history I would like to point out that the first railway to be operated in Australia was from Melbourne to Port Melbourne, two miles, opened on September 12, 1854, as stated in the 1958 edition of "The Official Year Book of the Commonwealth of Australia."

Yours faithfully,

P. R. COLE

c/o McKenzie & Holland Pty. Ltd.,
Sutton Street, Newport, Victoria

Making Branch Lines Pay

July 17

SIR,—In Parliamentary Notes in your July 8 issue reasons were given why a diesel railcar service would not pay on the Gravesend to Allhallows branch of British Railways, Southern Region. Usually British Railways claims that the introduction of this form of vehicle will effect considerable economies in operation and simultaneously create substantially more traffic. The figures for the Allhallows Branch obviously are based on the assumption that no extra traffic would be attracted by a regular-interval railcar service. It seems that British Railways already is living in George Orwell's world of 1984, where "double thinking" allows incompatible views to be held simultaneously where that is politically desirable.

Can British Railways state whether the introduction of railcars does or does not attract extra traffic? I suspect, from the figures published so far, that the additional traffic is in proportion to the frequency and convenience of the train service, and not to the type of traction.

Yours faithfully,

A. E. DURRANT

7, Spencer Road, Chiswick, London, W.4

THE SCRAP HEAP

Railway Threat to Rare Birds

An appeal to save the rare whooping crane from disturbance by the proposed new railway from Northern Alberta to the Great Slave Lake area is being considered by the Canadian Government. The Audubon Society of Canada is concerned that one of the routes suggested passes near the nesting grounds, and has proposed an alignment further west. Editorial reference to the project is made on page 90.

Table Talk

On a certain section of British Railways, where the going is often so lively that the little hats on the teacups in the refreshment car are more than just a decoration, the Pullman staff has devised an ingenious method of keeping the table-mats out of the general centrifugal whirl. The waiters lay on the plastic tabletops paper serviettes which they sprinkle with cold water before covering with a table-mat, finishing off with one or two light, firm slaps. "By the time we reach the terminus that'll be dry," they tell you. The table-mats will also be in position. When replaced, the underlying paper serviette is used to clean off and thus prepare the table to receive further anchors for mats. To the question: "Is this standard practice, or have you developed it yourselves?" the waiters shrug their shoulders. "We've tried *everything*," they say with deep resignation.

Short Way with Trespassers

The Toronto Transit Commission has given a welcome lead in dealing with the trespasser nuisance at car sheds and other electric railway installations. We are indebted to a correspondent for the illustration of a notice at the entrance to the T.T.C. Yonge Street Subway car sheds. The curt statement that "trespassers may be electrocuted" should be found by other railway managements to be an effective deterrent.

Engine Crews Visit Warship Namesake

At the invitation of Captain H. R. Law, of the aircraft carrier H.M.S. *Centaur*, two British Railways drivers and two firemen visited Portsmouth on July 15 and were conducted over and entertained to luncheon in the *Centaur* After hearing that Western Region "Warship" class diesel-hydraulic locomotive No. D808 had been named *Centaur*, Captain Law decided to invite the crews who man the locomotive to look over his ship. His guests last Friday were Driver J. F. Meade and Fireman F. Blew of Taunton, and Driver R. Weeks and Fireman M. Mitchell of Exeter.

Locomotive Love

To Tony, a 27-year-old clerk, it was a love so deep he knew no one else would really understand it—except perhaps his pretty wife, mother of his three children. When the children were tucked in bed at their cottage near Retford, he told his wife everything. After a long discussion she said: "Bring her home if it will make you happy." And that is why Tony, who works at Lound Royal Ordnance factory, has a 73-year-old, 52-ton steam engine and tender in a railway siding 100 yds. from his home. "British Railways," he said, "were going to scrap it, but when I was interested in buying it they very kindly gave me six months to raise the money." He added: "I don't want to say how much I paid for it. I paid British Railways its scrap value, and they delivered it here by rail. I'm planning to spruce it up with a bit of paint and then I reckon it will keep me busy for years. If I move from here I'll take it with me." The engine was used for shunting. A scrap dealer at Doncaster said these engines fetched up to £500.—*From the "News Chronicle."*

Shark at Railway Packet Port

Two British Railways boatmen battled with an 8-ft. 4-in. shark which found its way inside the inner harbour at Holyhead. The men were in a small boat near the quay when they saw a fin beside them. They struck at the shark with a boat-hook and stunned it. Spearing the shark, they hauled it ashore.—*From the "Daily Telegraph."*

Petti-cash ?

It's time the masculine world of the railways had a little petticoat rule, thought 18-year-old Fraulein Rosi Gamnitzer. The ticket collector on the local train at Bamenohl, near Dortmund, charged her 2s. 10d. excess fare because he claimed that with her puffed-out frilly petticoats she was occupying one-and-a-half seats. Rosi paid, then went home and wrote an indignant letter of complaint to the railways. She got her money back — and a letter of apology.—*From the "Daily Herald."*

Trans-Siberian Aids Trade (1900)

The most extraordinary activity is being displayed by American commercial agents in Siberia. Having accumulated enormous quantities of American manufactured goods at Vladivostock and other places, these agents are now disposing of their goods with ease all along the line of the Trans-Siberian Railway, even into the Chinese territory of Manchuria, as far as the line reaches. The local buyers are far from complaining of this unexpected competition, for it is all to their advantage, but the Russian merchants and native manufacturers are in a state of alarm. . . . Petitions are being continually addressed to the Imperial Government to save the native manufacturer from ruin by taking steps to prohibit the selling of American manufactured goods on Siberian markets. —*From "The Financial Times" of July 7*, 1900.

Cost Spirals in the Tea Cup

Wage rises whirl the prices up,
Declares the B.T.C.,
And that's the reason why, you see—
Regretfully they say—
A penny more you've got to pay
For coffee and for tea.
And so, respectively,
From now the price per cup
Will be:—
Nine pennies for a coffee
And six pennies for a tea.

M.S.M.

Deterrent to trespassers at the entrance to the Toronto Transit Commission electric car sheds

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

MOZAMBIQUE

New Station at Beira

Plans have been approved for the construction of a new railway station at Beira which will cost in the region of £500,000. Not only will it house the usual railway offices and public facilities, but it will have its own restaurant, bar, shops, postal services and a special medical centre. The main building will include the administrative offices and will be eight stories high, while the station proper will have five platforms, three for arrivals and two for departures. Provision will be made for additional platforms should they become necessary at a later date. All platforms will have umbrella roofing and will be a minimum of 270 yd. in length. There will be a public car park able to accommodate some 500 vehicles in addition to a staff parking area for some 200 additional cars.

IVORY COAST

Record Traffic

Traffic on the Abidjan-Niger Railway in 1959 broke all records. The line conveyed 1,386,610 passengers, against 1,318,281 the previous year. The increase in goods traffic was greater: 504,000 *tonnes* were carried, compared with 438,000 in 1958.

INDIA

Remodelling of Madras Central

One of the most urgently-required works in South India is the remodelling of Madras Central Station and the yards and tracks serving it. The Southern Railway is carrying out works estimated to cost £750,000. The principal ones are the construction of a new coaching yard near Basin Bridge, with stabling facilities, and carriage-washing and maintenance plant. In the station itself 11 platforms each capable of holding a train of 15 bogie coaches are being provided, and a new parcels office is being built. The approach lines from Basin Bridge to Central are being quadrupled, and power-signalling is being installed throughout the area.

VICTORIA

Melbourne Underground Plan Revised

Some important alterations to original plans for the future underground railway in Melbourne have been announced following on the discovery of a technical method by which the Clifton Hill group of lines can be incorporated in the scheme. The original plan provided for the railway to leave the existing southern and suburban system about half way between Richmond and Flinders Street Stations where it would start underground; travel north to the corner of one of the main east-west streets (Lonsdale Street) and turn westward down this to Spencer Street; turn north west and come above ground again connecting with the northern and western suburban railway system between Spencer Street and North Melbourne Stations.

Present plans provide for this route to remain substantially unchanged except for the fact that the line will turn from east to west one street further north (Latrobe Street). An important alteration, however, to the original plan is that the Clifton Hill group of lines will be brought into the underground scheme. Thus all suburban lines will be linked with it except the two short lines to St. Kildare and Port Melbourne. In addition there are to be four new city stations instead of three as originally proposed and a direct connect between Spencer Street and Flinders Street stations and the underground system which will enable trains to run round a city circle. The estimated cost of the project last year at current wage levels was £25,000,000. This is an increase of £10,000,000 on the plans proposed in 1954.

NEW ZEALAND

Training of Apprentices

Mr. A. T. Gandell, General Manager of the Railways, speaking at an industrial development conference committee in Wellington, said that after spending considerable sums to train apprentices the New Zealand Railways Department was losing the alarming rate of 45 per cent of the intake to private trade. From 1950 to 1954 inclusive 883 boys were fully trained and 398 or about 45 per cent, left for private trades. He would not attempt to explain the reasons, but the boys were usually offered something more by way of inducement.

UNITED STATES

Moving 176-ft., 132-ton Girder

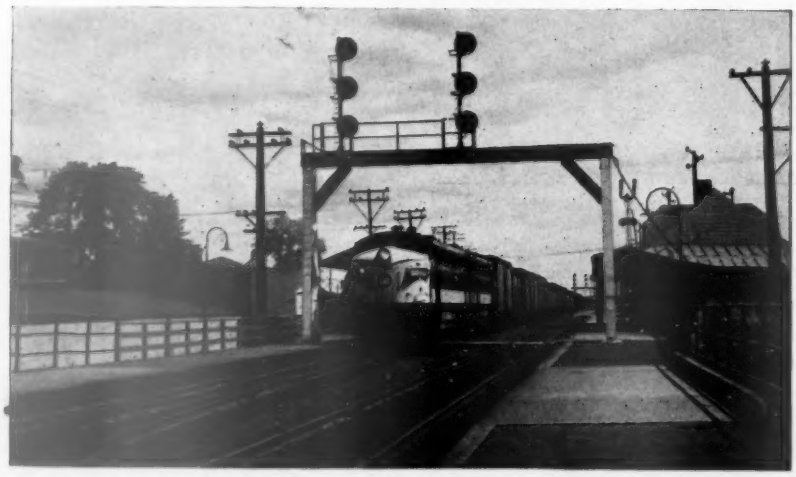
For a complicated high-level road junction in Bronx, New York, it was found necessary to use a single box-girder 176 ft. long and weighing 132 short tons. This girder was fabricated at an ironworks near Pittsburgh and was moved by rail nearly 400 miles, because of necessary detours, although the shortest distance by rail is 200 miles. The girder was conveyed on four bogie flat wagons. The circuitous route included a transit by wagon ferry over New York Bay. Arrived at a siding in the Bronx area, the girder was loaded on to two flat lorries with the aid of a locomotive breakdown crane. To negotiate the streets of Bronx from siding to site, the rear lorry had to be faced backwards and driven in reverse gear; dawn on a Sunday proved the best time from the traffic point of view. This movement is stated to have cost about £1,570.

ARGENTINA

Signalmen's Strikes

The signalmen in the Buenos Aires suburban area of the General Mitre Railway started a 15-day work-to-rule movement without previous notice on June 29, completely disorganising train services. The reason for this movement, they stated, was to obtain the cancellation of disciplinary measures imposed

Diesel Working in Eastern Canada



Canadian National Railways goods train passing St. Lambert, a typical wayside station in the Montreal suburban area

on four men who during May caused an interruption to the services by cutting off the supply of electric current to the signalling installations. Through the intervention of the Unión Ferroviaria, the men were not dismissed, but suspended. The Union called on the men to resume normal working in order that they could carry on negotiations, to which they agreed, and as a result the suspensions were reduced to ten days.

A series of half-hour stoppages by the signalmen of the Sarmiento Railway for similar reasons was also averted by the intervention of the Union.

ITALY

Closure of Val Gardena Line

With the commencement of the summer timetable, the narrow-gauge Val Gardena line of the State Railways has been replaced by a road service. This line, built by Austrian military engineers during the 1914-18 war, was the last narrow-gauge steam-worked section of the State Railways on the mainland of Italy.

ROUMANIA

Diversion of "Orient Express"

The "Orient Express" between Paris and Bucharest has been diverted in Roumania to run *via* Timisoara and Turnu Severin, paralleling the River Danube in the region of the Iron Gates. This train formerly ran *via* Sibiu and Ploesti. A passenger service has been reintroduced between Warsaw and Bucharest by the direct route *via* Lvov, Cernovtsi and Dornesti. Before 1939, through vehicles (including a thrice-weekly sleeping car) used this route, but that part of the line which crosses U.S.S.R. territory has since been converted to the Russian gauge. Passengers by the new service are therefore required to change trains at the two frontier points.

HUNGARY

Railway Material for Greece

M. Leonides Dertilis, the Greek Minister of Commerce, has signed an agreement in Budapest to increase the volume of goods to be exchanged under the three-year trade pact signed in December last year. The agreement makes it possible for Hungary to increase its deliveries of railway installations and equipment.

WESTERN GERMANY

Air-conditioned D.S.G. Cars

The German Sleeping & Dining Car Company (D.S.G.) has equipped 10 of its restaurant cars on the Munich–Basle and Hamburg–Dortmund–Hook of Holland routes with apparatus which changes the air completely 14 times an hour. An additional 20 D.S.G. cars will be fitted with this device during the course of this year. By next summer, the D.S.G. hopes to fit all remaining restaurant cars with draught-free ventilation grilles on the windows which have already proved popular in long-distance diesel trains.

Fewer Accidents to Railwaymen

The number of accidents to Federal Railway staff on duty in 1959 averaged 8·2 a month, against 8·7 a month in 1958. Fatal accidents were 26 per cent fewer than in the previous year. The sickness rate amongst railwaymen remained about the same.

BELGIUM

Landen-Hasselt Electrification

Electric traction at 3,000V. d.c. has been inaugurated between Landen and Hasselt, serving the rapidly increasing population of Hasselt and surrounding areas of Limburg. Passenger trains run every hour in both directions. In the morning and the evening a half-hourly service is provided. Because of a temporary shortage of electric locomotives and motor coaches two trains in each direction are worked by diesel railcars, and two other hauled by diesel locomotives. The Landen–Hasselt section was the last major line included in the previous electrification programme of the Belgian National Railways. Conversion from Brussels *via* Mons to link up with the French National Railways at Aulnoye is planned for 1962 and further lines are now to be electrified.

Publications Received

Stamps and Railways. By James Watson. London: Faber & Faber Limited, 24, Russell Square, W.C.1. 8 in. by 5½ in. 142 pp. Illustrated. Price 12s. 6d.—Postage stamps depicting railway subjects are the pegs on which the author hangs descriptive material. The author has assembled his material with care, and much ground is covered. The best features of this original work are the well-reproduced stamps. The variety of motive power shown in them is enormous. It is a pity that more detailed descriptions are not given of the stamps themselves and of what they portray. Some half-tone illustrations of trains, such as that of the Malayan Railway "Golden Blowpipe" express (with which is reproduced the stamp made from it), are well chosen. More might well have been said of the reasons why Governments and postal authorities chose to portray certain locomotives, railcars, and so on. The standard of engraving and printing of most of the stamps seems to have been remarkably high.

The Iron and Steel Board—What it Is and What it Does. Published by the Iron & Steel Board, Norfolk House, St. James's Square, London, S.W.1. Rochester, Kent: Staples Printers Limited. 8½ in. x 5½ in. 31 pp. Paper covers. Produced for wide circulation in industry and also to Members of Parliament, Government departments, economic faculties of universities, and libraries, this booklet describes the Board's composition and work in some detail. Separate chapters cover historical background and present character of the Board; costs and prices; future demand; expansion and modernisation of plant; short-term supply and demand; research and technical progress; trade practices and competitive conditions, and international bodies. Appendices give details of the publication of statistics, of the board's publications, and of its current membership.

Travel Literature for Russian Visitors to Britain.—Simultaneously with the introduction of the through sleeping cars between Moscow and the Hook of Holland, the British Travel & Holidays Association, 64, St. James's Street, London, S.W.1, has published a leaflet in Russian, illustrated in colour and monochrome, which describes briefly some of the principal places in Britain of interest to visitors from the U.S.S.R. The well-reproduced illustrations depict not only relatively familiar subjects such as the Backs at Cambridge, Glamis Castle, the Mountains of Mourne, and Snowdonia, but also Jodrell Bank Observatory in Cheshire.

The Midland Pullman.—A 12-page brochure, of a high standard of printing and illustration in colour and monochrome, produced by the London Midland Region, British Railways, gives many facts of interest to the intelligent traveller by the "Midland Pullman" diesel multiple-unit trains between St. Pancras and Leicester and Manchester. Besides brief details of the train set itself, timings, and so on, there are notes on the St. Pancras to Manchester line of the former Midland Railway, its history, and some notable features; and on the Pullman Car Co. Ltd., with photographic illustrations of Pullman cars on the Midland Railway in early days. The coloured frontispiece is an artist's impression of the train in its blue livery at speed in the Peak District. The chief places on the Midland route to Leicester and Manchester are shown in a coloured pictorial map. The pleasing gilt cover bears the arms of the County of London and of the City of Manchester.

French Railways Travel Literature.—The well-produced literature issued by the French National Railways and obtainable in Britain from French Railways Limited, 10, Haymarket, London, S.W.1, and principal travel agents, includes folders summarising the attractions of particular regions of France. A sketch map shows the area covered by each folder. The cover designs and photographs of scenery and of accommodation in trains, and so on, are well reproduced in colour. Another folder gives particulars of the S.N.C.F. self-drive car hire service, a country-wide facility available at 143 railway stations in France, and one which is being used by the travelling public on an increasing scale.

Brahmaputra Bridge Construction at Pandu, Assam

Twelve-span 4,250-ft. structure carrying double-track metre-gauge line and road between Amingaon and Pandu

THE Brahmaputra Bridge, which is now under construction between Amingaon and Pandu, will carry a double-track metre-gauge line of the North-East Frontier Railway, linking the railway system in Assam with the rest of India. It will replace the existing wagon ferry. The bridge will also carry a 24-ft. road with two 6-ft. footways on the upper deck.

Ten Main Spans

The bridge consists of 10 main spans each approximately 400 ft. in length and one shore span on each side of 105 ft. Model experiments at the Poona Research Station and calculations showed that though the river banks may be strengthened with some stone pitching, no major river training works are required. In fact, the suitability of the site and general history of the bridge project are discussed on page 92.

The concrete piers are founded on circular-ended wells measuring 53 ft. 6 in. transversely and 32 ft. longitudinally; the steining is 9 ft. thick and the two transverse diaphragms are 7 ft. 6 in. The maximum bearing pressure at the bottom of the wells is 13 tons a sq. ft. Each steel well-curb is of ½-in. plates with a 2½-in. thick cutting edge and is 15 ft. deep.

On top of it are added 7-ft. steel-plate strakes to whatever height is required by the depth of water so as to form the walls of a caisson, which is made air-tight and fitted with an air-lock.

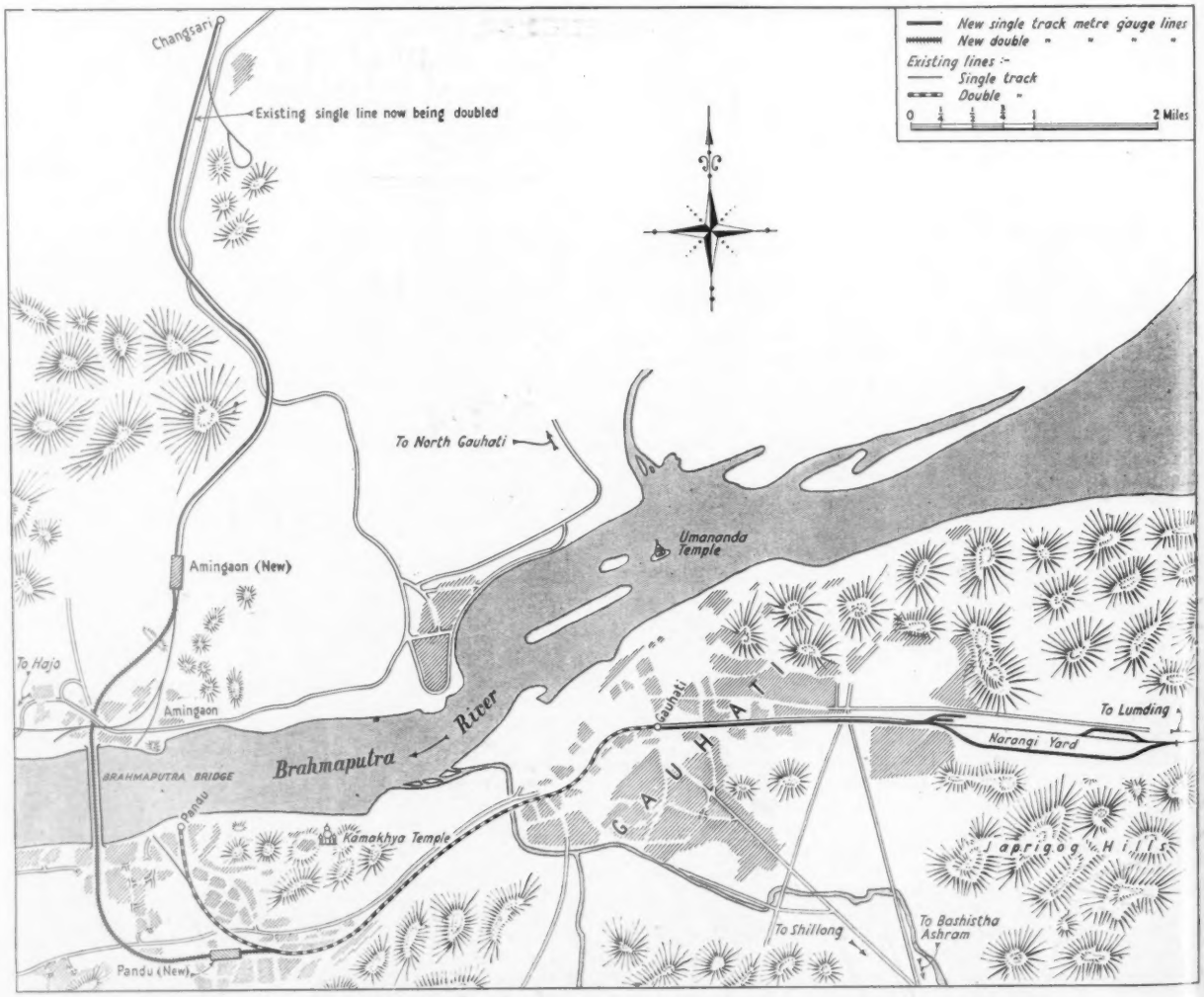
Sinking Caissons

Each caisson is thus assembled on the river bank, launched when the river rises and, with 2 lb. of compressed air, floated out to a sinking-set anchored in the channel. The sinking-set has two steel towers 50 ft. high mounted on twin barges; as the tops of the towers are connected by steel girders the whole forms a floating gantry capable of lifting a loaded caisson. The set is warped into position with the caisson suspended from it precisely over the pier site and some 60 tons of concrete are poured into the caisson, causing it to sink when the suspension tackle on the set lowers it until just grounded on the river bed.

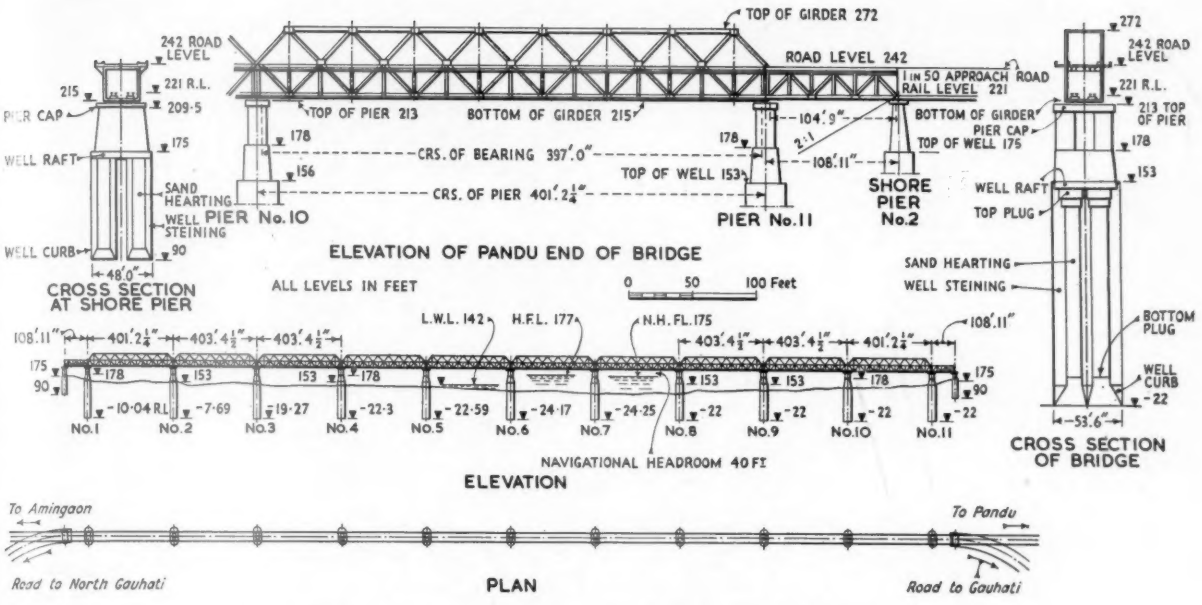
Well Sinking

After grounding, the river-bed under the well is dredged with grabs excavating in the dredge-holes of the well, dredging and further concreting proceeding alternately causing the well to sink to the desired depth. To facilitate dredging explosives have to be used in some cases.

The strength of the well concrete varies from 1,500 lb. to 3,400 lb. per sq. in. according to the tensile forces it has to resist at different levels. The bottom



The Brahmaputra River in the Pandu area, showing defile above the site of the bridge



Elevations and cross sections of double-deck road and rail bridge

22 ft. and the top 11 ft. of the dredge-holes are finally plugged with concrete, the intervening space between plugs being sand-filled. Finally, there is a 6-ft. R.C. cap to complete each well. The rate of sinking varies from 1·96 ft. to 2·75 ft. a day.

Depths of Wells

The wells are being founded at various depths, some as great as 200 ft. below high flood level (H.F.L.) and 165 ft. below low water level (L.W.L.). Preliminary investigations showed that the maximum expected scour is 134 ft. below H.F.L. The strata pierced vary from fine sand to very stiff clay. In the latter, charges of gelignite up to 10 lb. in each of the two dredge-holes in each well had to be used. The total charge required for a well has varied from 455 lb. to 2,785 lb.

Pier Construction

Each pier is bound to its well with rail-pieces acting as dowels. Its bottom part is of solid concrete tapering from 48 ft. 6 in. by 20 ft. at the base to 45 ft. 6 in. by 17 ft. at its 22-ft. height, where the level is 1 ft. above highest known flood level. The top 2 ft. are in R.C. and on this are built two cylindrical R.C. columns 15 ft. in dia., 29 ft. in height, and spaced at 29-ft. centres. They are surmounted by a R.C. capping girder 6 ft. deep × 47 ft. × 18 ft. The main-girder bearings rest on steel grillages embedded in this cap. For subsequent girder erection two temporary steel brackets are bolted to the solid base of each pair of columns and project 75 ft. from it towards Amingaon and 25 ft. towards Pandu. As the bridge is within an intense earthquake region, allowance is made in the design of the foundations for a seismic acceleration of G/10.

The through-truss girder spans when erected will give a 40-ft. clear headway above average H.F.L., which is 2 ft. below maximum known H.F.L. Each span is designed to carry a double-track metre-gauge railway or alternatively a single 5-ft. 6-in. gauge track on the lower deck. The superstructure is designed to allow of a change over from metre to broad gauge. To suit the double line the main girders are spaced at 29 ft. 6 in. between centres; the roadway deck is 21 ft. 6 in. above rail level.

High-tensile steel is being used in the main-truss and lateral-riveted members, and mild steel in the welded elements of both decks and in the supporting verticals. Except in the minor connections all rivets are in high-tensile steel and ⅞-in. dia.

Erection of well-curb on river bank

Superstructure Design

In estimating the dead load of the superstructure, provision is made for 320 lb. per ft. run for cables, mains, and rail-level footways. The roadway system is designed for a single row of standard AA highway loading vehicles or for two rows of A loading, whichever produces the greater stresses. Allowances are made for impact in accordance with 1957 Bridge Rules; wind-pressure, 30 lb. per sq. ft. on the unloaded structure plus 5 ft. 6 in. single-line live load ; roadway and footways 20 lb. per sq. ft.; racking forces in the appropriate members 400 lb. per sq. ft.; braking forces; and earthquake shocks. All members

except sub-panel hangers and posts are pre-stressed.

The railway and roadway cross-girders are designed as members of vertical sway-frames subject to vertical and lateral forces. Also the roadway stringers and cross-girders are designed for composite action with the R.C. deck-slab, with shear connectors provided at intervals. Under the bridge rules weld stresses to permissible limits have to be X-rayed, but to avoid the considerable delays so caused the welds in this instance are designed for stresses up to only two-thirds of those limits. Every part of the whole superstructure has been made accessible for painting.

The total weights of steel in each of the main and 105-ft. spans are estimated to be about 1,000 and 150 tons, respectively. Apart from 432 tons of h.t. steel ordered from the United Kingdom all the h.t. and m.s. material used are products of the Indian Tata Iron & Steel Company.

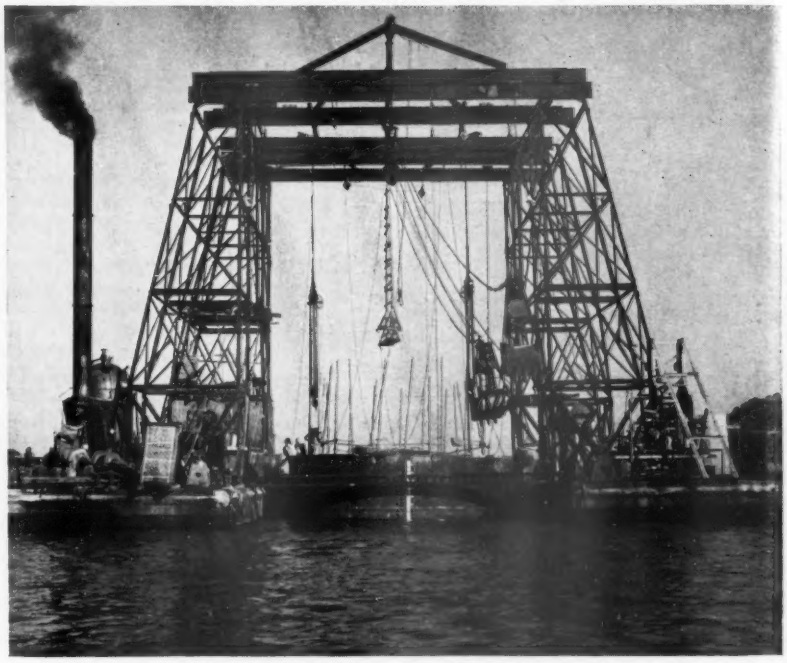
Girder Erection

Erection of the main girder spans progressively from the Amingaon (north) bank will be by the cantilever method, each span from an anchor span behind it. The exception will be the first span which will be erected on staging as far as one panel-point beyond the centre of the span, whence it will be cantilevered onwards to the first pier. Each succeeding span will be cantilevered to its thirteenth, out of a total of 16, panel point at the lower chord and to the eleventh at the top chord. A lateral connection will then be made from the thirteenth panel point to the 75-ft. temporary bracket projecting from the second pier to resist up to 30 lb. per sq. ft. possible wind pressure.

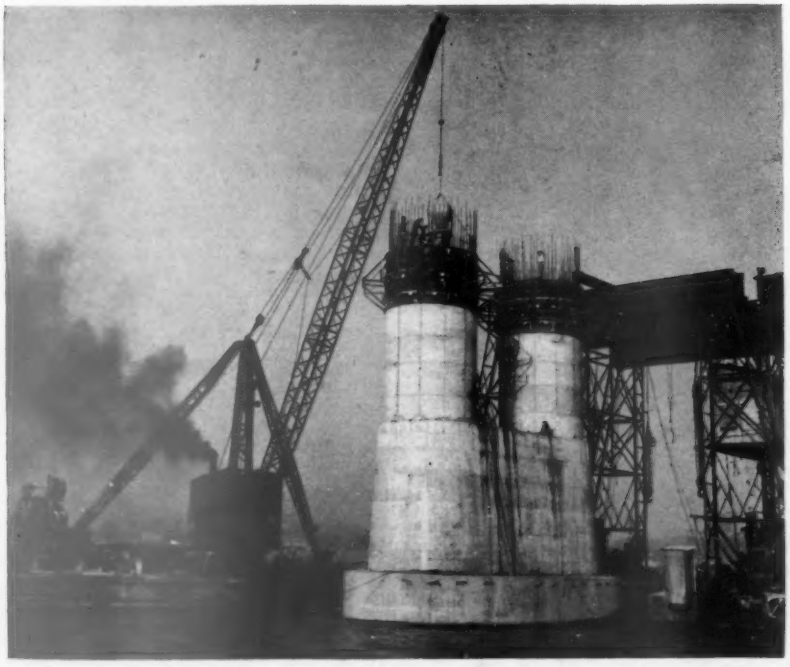
The seven-mile section from the last station north of the bridge is being doubled and diverted on the north bank up to the north abutment. The works involved are some 35,000,000 cu. ft. of earthwork, two balancing culverts, a local-road underbridge and three-spans-of-60-ft. viaduct over a national highway. Fill across marshy land is being stabilised by double-row piling and boulder filling. The southern approach consists of 2½ miles of new line involving very similar earthworks and bridging. The ruling gradient on both approaches is 1 in 200 and the sharpest curves will be of 29-ch. rad.

The total cost of the whole undertaking is estimated to be some £80,000,000 of which about £37,000,000 are for the bridge proper, £13,000,000 for the approaches, and £20,000,000 for traffic yards, stations and staff quarters and alterations to approach lines. The remaining £10,000,000 is for ancillary works and expenditure.

We are indebted to Mr. T. R. Vachha, Engineer-in-Chief, Brahmaputra Bridge Project, North-East Frontier Railway, Pandu, for the information contained in this article.



Caisson grounded and sunk 20 ft. under a sinking set



Concreting of pier cylinders with 100-ft.-jib Henderson floating crane

SUITCASE HIRE SERVICE.—The Western Region has suitcases for holiday hire, "Luggage in Advance," at a cost of 7s. per suitcase for three weeks, on the condition that travel is from Paddington or Cardiff General stations to any other station in the Western Region. The luggage-in-advance fee of 5s. 6d. is payable in addition to the hiring fee. All collection and delivery of cases is inclusive.

LONG ISLAND RAILROAD STRIKE.—The main service on the Long Island Railroad, which carries 85,000 commuters and 90,000 single fare passengers daily to and from New York City, has been suspended because of the strike of 1,400 guards, ticket collectors, pointsmen, and brakemen. The Governor of New York, Mr. Nelson Rockefeller conferred with the President of the railway, Mr. T. M. Goodfellow, and a representative of the strikers, but his attempt to mediate so far has failed.

VINYL ACETATE TRAFFIC THROUGH HEYSHAM.—A considerable quantity of vinyl acetate is being consigned six times weekly from Hull to Belfast *via* Heysham and British Railways mv. *Venturer* and *Enterprise*. The liquid, which is highly combustible, is conveyed in tanks. These are moved by rail to Heysham Harbour, where they are loaded into the cargo vessels. Firemen stand by with foam extinguishers during loading and unloading at Heysham and Belfast, ready to seal with foam any leak which may appear in the tanks.

Conveyance of Large and Heavy Indivisible Loads

Regulations and factors governing movement by rail and road

(By a correspondent)

Girder 128 ft. long for overline road bridge en route from Butterley, Derbyshire, to Hook, Hants. Note method of shackling top of load to bogies

AN abnormal indivisible load which has to travel by road is defined as one which cannot, without undue expense, be divided into two or more loads for the purpose of carriage on the roads, and cannot, because of its size or weight, be carried by a heavy road vehicle complying with the requirements of the Construction & Use Regulations.

Regulations for Movement by Road

Problems in transporting by road arise mainly with regard to length and in going round difficult corners, and weight per wheel in consideration of road surface strength and capacity of bridges. Circuitous routes often have to be planned to avoid one bridge or one difficult corner.

Certain requirements must be complied with. The total laden weight of the vehicle must not exceed 150 tons. The overall width must not exceed 9 ft. 6 in. (or 20 ft. in the case of a specially constructed trailer). The vehicles are exempt from the normal Construction & Use Regulations.

Except where a road vehicle was first registered or a trailer first constructed before January 1, 1952, the weight transmitted to the road by each wheel must not exceed 11½ tons. Limits are also placed on the weight bearing on each strip of road measured across the vehicle. This varies from 45 tons for a 2-ft. strip to 99 tons for a 10-ft. strip of road.

The road transport operator is required to give two clear days' notice, excluding Sundays and Bank Holidays, to the district police officer of each district through which a load weighing more than 75 tons or more than 9 ft. 6 in. wide is to pass. Six clear days' notice is required by each highway and bridge authority affected if the gross weight exceeds 75 tons, and a form of indemnity against damage must be lodged with each authority.

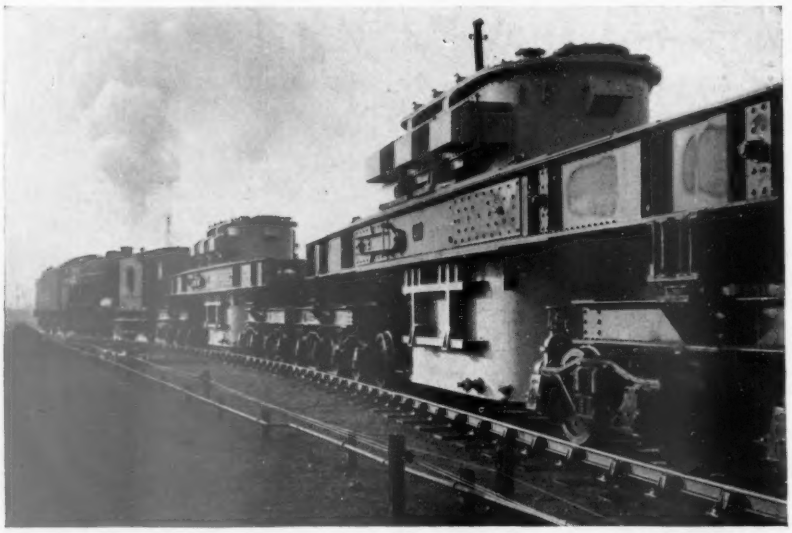
Construction & Use Regulations

Although the Construction & Use Regulations give length limits for normal type vehicles, there are no length limits imposed on abnormal loads and vehicles specially constructed for their conveyance. A speed limit of 5 m.p.h. is imposed, but under certain circumstances this may be raised to 12 m.p.h. Special restrictions apply in the London area.

Under the 1951 Motor Vehicles (Construction & Use) Regulations, every load must be made secure, and this provision applies to abnormal loads, the securing of which requires special tackle besides skill and experience. An attendant, in addition to the driver, must be provided for loads where the width of vehicle or load exceeds 8 ft. If the width exceeds 9 ft. 6 in. there must be two persons in attendance besides the driver.

The operator must often survey the

Conveyance of 113-ton anvil from Birmingham to Vénissieux, France, via Harwich-Zeebrugge train ferry. It was loaded on a Flatrol EAA wagon, and cantilever equipment was used to spread the load



Transformers weighing 61 *tons at Cheshunt, Eastern Region, being conveyed to B.E.A. power station at Rye House*

route to be used before the transit starts. Where possible the passage of corners can be planned by taking measurements, but sometimes, in difficult cases, a template is made and tests undertaken before the route is finally decided. In most cases the local authorities and police are fully consulted, whether there is a legal obligation to do so or not.

Loading Gauges

With railway transport, although there are not the same legal requirements, the former railway companies enforced regulations of their own, according to general and local conditions.

The load and structure gauges vary according to the original company which built each section of track. In 1950 the Ministry of Transport issued a booklet, "Requirements for Passenger Lines and Recommendations for Goods Lines . . . in regard to Railway Construction and Operation." These requirements and recommendations apply to new railway construction and re-construction. From the details given in the booklet it is clear that any load over 10 ft. wide or more than 13 ft. high above rail level will have to be worked under special arrangements. For greater safety, finer limits have been imposed.

Loads up to 9 ft. 6 in. wide are usually worked under normal traffic arrangements. Instructions issued by the former London Midland & Scottish Railway stated that all loads above this width would be accompanied by a goods inspector. Where the blocking of an adjoining line became necessary the load would be accompanied by a Goods and a Traffic Inspector. Where axle weights above 14 tons were involved, the Chief Engineer had to be consulted. Because of local considerations many of these instructions issued by the former companies are still relevent, and a booklet of instructions on the subject issued by the British Transport Commission on November 1, 1956, contains British Railways Regional and also general instructions.

Weight Restrictions

Weight limits are imposed by the capacity of the wagon. Special inspections are carried out if the weight of the load exceeds three-quarters of the wagon capacity. Length limits are co-related to the width of the load and the distance between the bogie centres of the wagon.

Many special wagons used on British Railways are built for abnormal loads such as transformers and stators. These are all graded and identified by code letters.

Operating Arrangements

British Railways classify out of gauge loads into: (a) those which may not pass another out of gauge load; (b) those which may not pass another train on an adjoining line; and (c) those where the possession of adjoining and opposite lines is necessary.

Each type is distinguished by a code name and is signalled by a special signal bell code, indicating the set of special instructions to which the signalman must work.

When enquiries are first received for the conveyance of such a load, the District Officer will send an inspector to check on measurements.

Details are passed to the Chief Civil Engineer and the Signalling Engineer and in some cases to the Carriage & Wagon Engineer, and it is decided what route the load will take. Timings for the train are arranged by the Operating Superintendent or if the load is to pass by normal service trains, notices are issued to this effect. In some cases the load can only be moved at week-ends or during the night, when the level of other traffic has fallen.

It may be necessary sometimes to place loads off-centre of the wagon to clear obstructions. Movement of the load during transit or even special slewing of the track may be necessary on certain parts of the journey.

In extreme cases where full and correct measurements are difficult to obtain, a light template of the load may first be carried over the section of track concerned.

The 1956 booklet also gives details and instructions with regard to securing abnormal loads, and a special type label is used so that attention is drawn to the fact that the load is not within gauge, and arrangements may be made for skilled inspection to be made during transit.

PRESERVATION OF EAST SUSSEX BRANCH LINE.—The Bluebell Line Preservation Society hopes to be able to proceed with its plan to operate the disused branch line of the former London Brighton & South Coast Railway between Horsted Keynes and Sheffield Park, East Sussex. After inspecting the line, Colonel J. R. H. Robertson, Inspecting Officer of Railways, Ministry of Transport, stated recently that his report "would not be unfavourable."

OFFICES BANNED OVER FENCHURCH STREET STATION.—The Court of Common Council of the City of London has refused permission for the erection of an office building over Fenchurch Street Station, terminus of the London Tilbury & Southend Line of the Eastern Region, British Railways. In recommending this refusal the Improvements & Town Planning Committee stated that the site was zoned for railway operational purposes and the introduction of offices other than those ancillary to the operational undertaking would be contrary to the policy of restricting office development to sites already zoned for office purposes. One member wondered whether, if the B.T.C. asked to be allowed to build, it would be permitted, as it had been at Cannon Street, Holborn Viaduct, and other stations. Why, he asked, could not a private developer be given similar permission ?

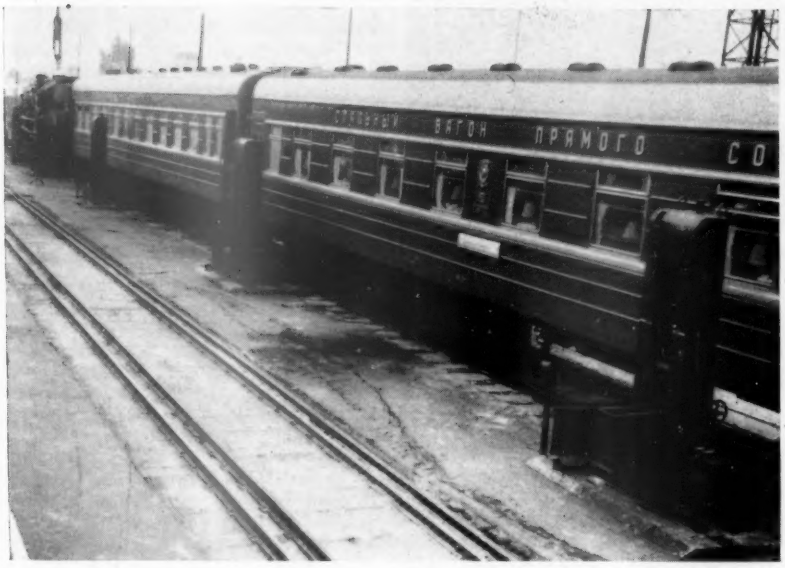
BRITISH STANDARD FOR WHEEL SIZES.—A new 15-page British Standard publication, B.S. 3117: 1960, "Wheel pairs for locomotives and rolling stock (dimensions) Part 2: Wheel centres and monobloc wheels," is one in a series dealing with complete wheel pairs for locomotives and rolling stock. Parts 1–4 dealt separately with: axles; tyres; Gibson-ring tyre fastening; and machining and assembly. The standard lays down a limited number of preferred leading dimensions to enable the least number of sizes of wheel centres and monobloc wheels to be manufactured. The following types of wheel centre with separate shrunk-on tyres are dealt with: rolled-steel disc; cast-steel spoked; cast-wheel web (normally for small diameters only); cast-steel to special design. The text is amplified by three full-page diagrams. An appendix gives a list of metric equivalents. Copies, price 4s. 6d., may be obtained from the British Standards Institution, 2, Park Street, London, W.1.

G.E.C. MOULDED PLASTICS DIVISION.—The Witton Moulded Insulation Works, General Electric Co. Ltd., Birmingham, is now to be known as G.E.C. Moulded Plastics Division.

Bogie Changing at Break-of-Gauge Station

Equipment for transferring through sleeping cars between Russian 5-ft. and European standard gauge on Russo-Polish frontier

(*By a correspondent*)



Moscow-Berlin through train being positioned at lifting jacks at Brest by former German (wartime) 5-ft. gauge locomotive. The further vehicle is a restaurant car

DIFFERENCES in gauge have been overcome in goods traffic by changing axles, as is done at the Franco-Spanish frontier in the case of wagons conveying citrus fruit. The only cases of dual-gauge passenger vehicles in public service are those of transfer between the 5-ft. gauge of the U.S.S.R. Railways and the 4-ft. 8½-in. lines of railways in contiguous countries running in some instances through, to and from, stations in Western Europe and China. Reference to some of the services was made in our issue of August 2, 1957.

Introduction, in the summer timetable of through dual-gauge Russian 5-ft., and Western 4-ft. 8½-in. gauge sleeping cars from Paris and the Hook of Holland to Moscow has focussed attention on the method by which these vehicles, and others, are adapted for the transfer between the European standard to the Russian gauge.

Services to Western Europe

Although dual-gauge passenger vehicles have been running for several years between Moscow and the capitals of Eastern and Central Europe, they have not previously operated west of Berlin and Vienna. The new services to Paris and the Hook are operated by Russian-owned vehicles, which depart from previous Russian practice in being divided into two-berth instead of four-berth compartments.

The sleeping cars use the bogie-changing installation at Brest (formerly Brest-Litovsk) at the frontier between U.S.S.R. and Poland. This installation was constructed in 1954 for the through services to Warsaw and Berlin. The yard where changing is effected is about 1,000 ft. west of Brest Passenger station, and alongside the broad-gauge tracks.

Conversion Procedure

On leaving the yard at the western (standard-gauge) end, vehicles are propelled along a spur which leads through a carriage-washing installation to the standard-gauge platforms on the north side of the station. The yard can handle up to 12 cars at a time, six on each of the two tracks.

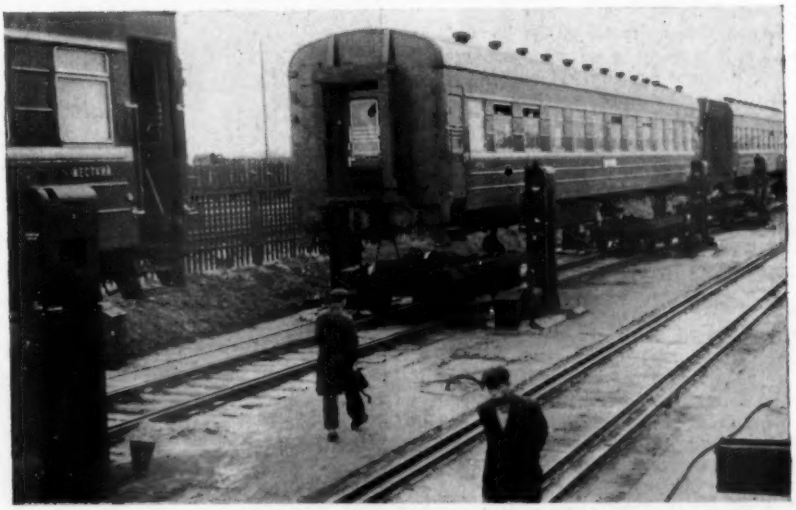
Bogies are changed by raising each car on electric jacks while the bogies are removed and replaced by others of similar design but of different gauge. The cars are propelled into the yard by a shunting-engine and positioned on broad-gauge tracks, one car to each two pairs of jacks. As the difference in gauges is only 3½ in., no separate running rails for the standard gauge bogies are required, and no lateral movement of the car bodies is involved; the standard-gauge bogies traverse this short section of 5-ft. gauge on the rims of their tyres. The wheelsets are held centrally in position by a continuous double check-rail, against which the flanges bear.

A single gauntletted track of both gauges runs between the two lifting tracks, and is used as release road and to enable a steam crane to give assistance if required.

Release of Bogie Mountings

When each sleeping car has been correctly positioned, its conductor locks three of the car doors and stands duty at the fourth, to prevent passengers from attempting to board or alight while the car is in the raised position. The yard staff then board each car in turn and open small floor-hatches in the two end sleeping compartments, to release the bogie mountings. Others disconnect the brake connections and dynamo belts.

The electric jacks are then run in under the car sides, and the car is raised slowly



Moscow-Berlin sleeping car in raised position, with 5-ft. gauge bogies about to be drawn out. Between the two conversion tracks is the mixed-gauge (5-ft. and 4-ft. 8½-in.) release road

Train of 5-ft. gauge bogies being moved under jacked-up sleeping cars

through about 3 ft.

When all cars on a track have been raised, a cable is attached to the furthermost bogie, and the entire train of bogies drawn in to one end of the track. Where possible, the next use of the same track will take place in the opposite sense, so as to use the same bogies and minimise shunting.

Further bogies of the other gauge are then run in from the opposite end of the yard, and positioned by hand beneath each coach, after which the motions previously described are repeated in reverse. The operations for each vehicle total some 20-25 min., but as the yard staff carry out the various operations on each car in turn, not simultaneously, the total time required depends on the number of cars in the train. For a 10-car train using both tracks the time taken is about one hour, but the two cars of the Paris/Hook–Moscow service together require only 30 min.

When the entire train has been dealt with and is ready to leave the conversion yard, a shunting engine backs the cars down until the automatic couplings engage, then hauls or propels them to the other side of the station.

Cleaning and Washing

While on the spur line to the standard-gauge station, the train is also cleaned and washed, using vacuum cleaners for the carpeted floors.

The installation at Brest station deals only with passenger stock, and jacks being spaced to deal with vehicles of about 56 ft. wheelbase and 80 ft. overall length, dimensions common to almost all modern Russian passenger stock.

Goods stock, whether two- or four-axle, is dealt with at a separate transhipment and axle-changing yard at Malaszewicze, in Polish territory some five miles west of Brest. One broad-gauge track parallels the standard-gauge tracks to this point, passing through the Polish frontier station of Terespol. Most through goods traffic seems to be handled in two-axle Polish State or German State wagons of which axles are changed in similar fashion to those of the Transfesa wagons used for traffic to and from Spain.

Although the through passenger vehicles, like most Russian main-line stock, are equipped for night travel, the timetables are normally arranged so that the train crosses the U.S.S.R. frontier during the day, to facilitate customs and passport examinations. This also lessens the intrusion on the privacy of those passengers occupying the end compartment of the 11-compartment (22-berth cars), in one of which a bogie hatch is situated. The other bogie hatch is in the conductor's compartment.

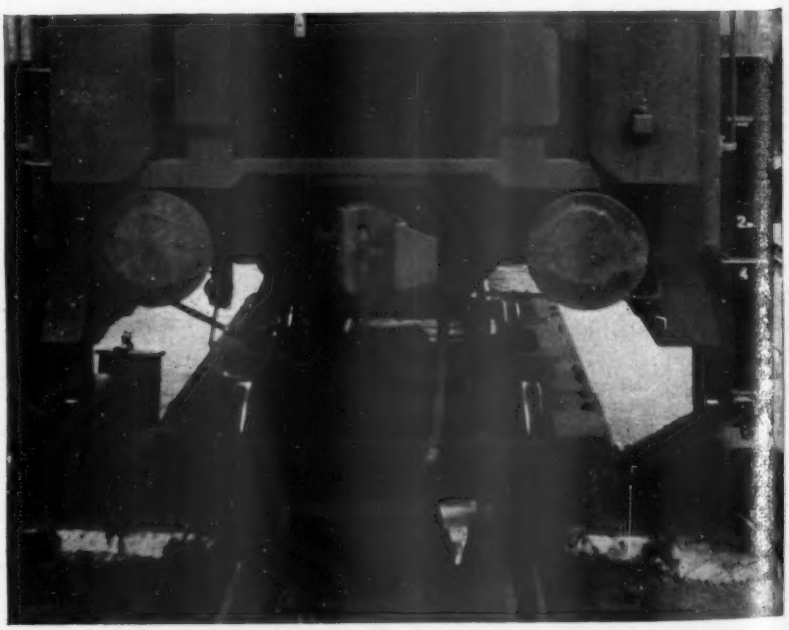
Passengers May Remain in Cars

On arrival at Brest, and on completion of customs formalities, passengers have the choice of leaving the train to visit the station restaurant, or of remaining in the cars while the bogies are changed. The westbound (Moscow to Paris or Hook of Holland) cars cross the frontier at about 9 a.m., but the eastbound cars do not reach Brest until 1 a.m.

Russian passenger stock which can exchange its bogies at the frontier stations for others of European or Chinese standard gauge is distinguished outwardly by a symbol resembling a lifting jack, painted on the car sides above each bogie centre. At least 10 per cent of the modern stock seen on a recent journey in Western U.S.S.R. was so marked. Stock built to the standard U.S.S.R. loading gauge can work only to Warsaw and Berlin or to China, and for other destinations such as Prague and Vienna, smaller vehicles built to the more restricted European loading gauge are used, some of them owned by the Czechoslovak State Railways.

Although originally introduced mainly for reasons of prestige, the through working of passenger stock from the U.S.S.R. to other European countries has expanded considerably in the past few years, and timetables show that the three bogie-changing installations at Brest, Csop, and Ungeni now handle about 50 cars a day, 25 in each direction, with additional cars in summer.

This enables installation costs to be spread over more passengers. The special tax of 5.75 roubles per passenger included in the through fares to meet the cost of changing the bogies is a substantial contribution towards the cost of this operation.



End view of sleeping car in raised position, showing 5-ft. bogies about to be drawn out. Standard-gauge bogies are held in position on the same track by the double check-rail

RAILWAY NEWS SECTION

PERSONAL

We regret to record the death of Sir Francis Dunnell, Bart., K.C.B., formerly Railway & Canal Commissioner, and at one time Chief Legal Adviser & Solicitor, London & North Eastern Railway. Sir Francis Dunnell was born in 1868 and admitted a solicitor in 1891, having joined the staff of the Solicitor's Department of the former North Eastern Railway Company at York the previous year. He was appointed Assistant Solicitor to the company in 1900, Secretary in 1905, and Solicitor in 1906. He held these positions until the date of amalgamation. In 1917 his services were lent by the directors to the Government, and he acted as additional Assistant Secretary to the Board of Admiralty; in addition, he acted as Secretary to Sir Eric Geddes's Naval Mission to America in 1918. At the conclusion of the 1914-18 war he became Secretary of the Co-ordination of Demobilisation Section of the War Cabinet. For his services with the Government he was made a K.C.B. in 1919, and two years later was further honoured by being created a baronet. On the formation of the Ministry of Transport in October, 1919, the directors of the North Eastern Railway Company consented to his temporary transfer to the Ministry for the period of control, and he held the position of Secretary and Solicitor until 1921, when he resumed his duties at York. During his service at the Ministry of Transport much of the work connected with the preparation and carrying through of the Railways Act, 1921, fell to his share. He was appointed Chief Legal Adviser to the London & North Eastern Railway Company in 1923. After five years in this capacity, he retired, but in 1930 he returned to public service as Railway & Canal Commissioner.

Mr. H. H. Crow, National Chairman, Road Haulage Association Limited, whose death was recorded in our July 15 issue, was appointed Chairman in May of this year, having previously served for four years as a National Vice-Chairman. He was at one time Chairman of the Association's Metropolitan & South Eastern Area, and of the Central London Sub-Area. He was also a Vice-President, Institute of Transport, a member of the Transport Panel of the Transport Tribunal, and Managing Director of the Crow Carrying Co. Ltd., Barking, Essex. Mr. Crow took a close interest in local industrial affairs, and was a past President of the Barking Manufacturers Association.

Mr. H. Firminger, Assistant Signal Engineer, London Transport Executive, whose death was recorded in our July 15 issue, joined the London Electric Railways in 1917 as an apprentice in the Signal Engineer's shops. After completion of his apprenticeship he was mainly concerned with outdoor signalling work. He became Chief Assistant to the Signal Engineer in 1946 and was made a Senior Executive Assistant in 1947. His promotion to Principal Executive Assistant came in 1950 and he was given the title of Assistant Signal Engineer in 1956. Throughout his career Mr. Firminger was primarily concerned with the introduction of new signalling and new signalling installations, and the careful testing and checking of all the complicated signalling circuits associated with signal cabins had, for many years, been his personal responsibility. He was also responsible for the signal systems installed in many modernisations and extensions, including the Metropolitan Line improvements in 1938-39, and the extension of the Central Line after the 1939-45 war. Up to the time of his death he was concerned with new signalling on the Upminster and Amersham Lines.

The late Mr. F. R. E. Davis, formerly Secretary, Great Western Railway, whose death was recorded in our July 15 issue, was born in 1887, and educated at St. Mark's College, Chelsea. His career began in the Accountant's Office, South Eastern & Chatham Railway, and in 1902 he transferred to the Great Western Railway Audit Office, entering the Secretary's Department the following year. In May, 1914, he was appointed Secretary to the London & North Western and Great Western Railways Joint Committee. During his service with the Royal Naval Air Service and the Royal Air Force, 1914–18 war, he was made an O.B.E. (Military Division), and was mentioned in despatches. He was also one of the British officers selected for service with the American Forces on the entry of the U.S.A. into the war, and in that capacity he visited America

The late Sir Francis Dunnell

Formerly Railway & Canal Commissioner ; Chief Legal Adviser, L.N.E.R., 1923-28

The late Mr. F. R. E. Davis

Formerly Secretary, Great Western Railway, 1926-47

Mr. V. R. Duncan

Appointed Assistant General Freight Traffic Manager, C.P.R.

Mr. D. N. Cooper

Appointed Assistant Manager (Industrial), C.P.R., Toronto

Mr. A. B. Smith

Appointed Assistant Manager (Industrial), C.P.R., Winnipeg

and was subsequently attached to the U.S. Forces in Western Europe. After demobilisation he became Secretary to the Fishguard & Rosslare Railways & Harbours Company, and he acted as Secretary to the Cork City Railways Company in connection with the winding-up of that company and the transfer of its undertaking to the Great Southern Railways Company of Ireland. In May, 1922, he was appointed Assistant Secretary to the Great Western Railway Company, and promoted to be Secretary in January, 1926. Mr. Davis acted on behalf of the company as a Director of the Penarth Pontoon Slipway & Ship Repairing Company, a delegate to the Railway Clearing House, and member of its Superintending Committee. He always took a keen interest in staff matters, and for many years was a trustee of the G.W.R. Enginemen's & Firemen's Mutual Assurance, Sick & Superannuation Society, the G.W.R. Pension Society, and the G.W.R. Provident Society. He was also a member of the committee of management of the G.W.R. Superannuation Scheme of 1908 and Fund of 1941, and the G.W.R. Salaried Staff Widows' & Orphans' Pension Society. In 1932 he became President of the Chartered Institute of Secretaries, and was a Fellow of the Royal Institution of Chartered Surveyors. He was for some time a member of Kensington Royal Borough Council, and was Mayor from 1945 to 1947. Mr. Davis was made a C.B.E. in the New Year Honours, 1936. He retired from the position of Secretary, Great Western Railway Company, in 1947.

Mr. V. R. Duncan, Assistant Freight Traffic Manager, Vancouver, Canadian Pacific Railway, who, as recorded in our July 8 issue, has been appointed Assistant General Freight Traffic Manager, C.P.R. system, joined the C.P.R. at Victoria in 1917, and later worked at Nelson, Vancouver, and Vernon. In 1944 he was appointed District Freight Agent, Edmonton. He was promoted to be Division Freight Agent, Calgary, in 1948, and three years later became General Freight Agent at Vancouver. He was appointed Assistant Freight Traffic Manager, Vancouver, in 1954. His new position as Assistant General Freight Manager of the system relates to the other Canadian Pacific appointments recorded in the personal columns of our July 8 issue, and to the reorganisation of the Freight Traffic Department of the system, to which editorial reference was made in the same issue.

Mr. D. N. Cooper, General Industrial Agent, Toronto, Canadian Pacific Railway, who has been appointed Assistant Manager (Industrial), Toronto, joined Canadian Pacific as an office junior at Montreal in 1928. Before transferring to the Industrial Development Department in 1939, he served in the Freight Tariff Bureau, Montreal. In 1948 he was appointed industrial Agent for Quebec & New Brunswick Districts. He moved to Toronto in 1952 to a similar position, and was appointed General Industrial Agent, Toronto in 1956.

The following have been appointed to the position of Industrial Supervisor in the reorganised Industrial Development Department, Canadian Pacific Railway:—

Mr. J. A. Dunlop, Industrial Supervisor, Montreal, joined the Canadian Pacific Railway in 1926 in the Chief Engineer's Office, Montreal, and was transferred to the Industrial Department in 1943. He was appointed Industrial Surveyor in 1945, Industrial Agent in 1952, and District Industrial Agent in 1956.

Mr. R. Lapalme, Industrial Supervisor, Toronto, joined the C.P.R. at Montreal in 1948. After six years he was transferred to the Quebec Central Railway at Sherbrooke, returning to the parent company in 1959 as District Industrial Agent, Toronto.

Mr. L. M. Murray, Industrial Supervisor, Winnipeg, joined the C.P.R. in 1924, and the following year was transferred to the Wharf Freight Office, Vancouver. For six years he was Travelling Freight Agent, Calgary. He was appointed Industrial Agent, Winnipeg, in 1959.

Mr. H. C. Phillips, Industrial Supervisor, Regina, joined the C.P.R. in 1941 in the Freight Traffic Department, and subsequently served in Moose Jaw and Saskatoon, before being appointed Chief Clerk to the Division Freight Agent, Regina, in 1955. In 1957 he was transferred to Winnipeg as District Industrial Agent. He returned to Regina in 1959 in a similar position.

Mr. G. W. Perks, Industrial Supervisor, Calgary, joined the C.P.R. Communication Department, Montreal, in 1939. He became Chief Draughtsman in 1943, and transferred to the Industrial Department in 1948 as Surveyor. Later he became Travelling Industrial Agent, Montreal, and transferred to Winnipeg in 1955. He was appointed District Industrial Agent, Calgary, in 1957.

Mr. J. A. Cromarty, Industrial Supervisor, Vancouver, joined the C.P.R. in 1929. He was transferred to the Foreign Freight Department in 1935 and served at Kobe and Tokyo, Japan, until 1940 when he enlisted in the R.A.F. In 1952 he became Traffic Representative C.P.R. at Kobe. He returned to Vancouver in 1954 and became District Industrial Agent, Calgary, in 1956. He was appointed Industrial Agent, Vancouver, in 1957.

Editorial reference is made to the reorganisation of the Industrial Development, C.P.R., on page 89.

Mr. A. B. Smith, General Industrial Agent, Winnipeg, Canadian Pacific Railway, who has been appointed Assistant Manager (Industrial), Winnipeg, began his railway career at Sherbrooke in 1911 in the Freight Department. During the 1914–18 War he served with the Canadian Expeditionary Force, and was awarded the Distinguished Conduct Medal. In 1940 he was appointed Industrial Agent, Montreal, and subsequently held the same appointment at Toronto. In 1952 he was appointed Industrial Manager, Prairie & Pacific Regions, Winnipeg, and four years later became General Industrial Agent there.

Mr. M. Srinivasan, Joint Secretary, Indian Railway Board, has been appointed Engineer-in-Chief, Northern Railway of India.

Mr. A. W. McMurdo has been appointed Assistant Civil Engineer, North Eastern Region, York.

Mr. A. E. C. Fawcett, Assistant to the District Traffic Superintendent, Workington, London Midland Region, has been appointed Assistant District Operating Superintendent, Marylebone.

Mr. E. J. Marklew, Superintending Engineer, Communications, New Zealand Railways Department, who, as recorded in our July 15 issue, has retired, has been in charge of the Communications Branch of the Railways since he joined the service. His first duties included the installation of small automatic exchanges in the four rail-

ways workshops, and also, in 1930, an exchange in the new Auckland railway station. For the following nine years he concentrated on the rebuilding of pole lines throughout the Dominion as well as the installation of several carrier telephone systems, teleprinters and automatic exchanges, and the train control system.

Mr. J. H. East has been appointed a Principal Executive Assistant in the Office of the Schedules Superintendent (Road Transport), London Transport Executive.

B.T.C. Road Services Appointments

The British Transport Commission has announced the following British Road Services appointments: Mr. G. R. Hayes to be Assistant Secretary; Mr. P. S. Rae-Scott to be Commercial Manager, B.R.S. (Contracts) Limited; Mr. E. Frogatt to be Assistant Divisional Manager, South Eastern Division, B.R.S.; Mr. H. Cliff to be District Manager, West Yorkshire District; Mr. W. Parkington to be Assistant Heavy Haulage Manager (Northern); Mr. E. G. Milne to be Manager, North Eastern Area; Mr. S. B. Bowskill to be Manager, Midland Area, Pickford's Heavy Haulage organisation.

Transport Users' Consultative Committee, East Anglia Area

The following appointments have been made to the Transport Users' Consultative Committee, East Anglia Area:

Members

Mr. A. M. Behagg, and Mr. K. B. Tebbit, representing Agriculture.

Transport Users' Consultative Committee, North Eastern Area

The following appointments to the Transport Users' Consultative Committee, North Eastern Area, have been announced:

Chairman

Mr. J. R. Ropner

Members

Mr. R. H. Bulmer and Mr. W. R. Bulmer, representing Agriculture; Messrs. J. Gerrard, G. C. Sewell, W. V. Golding, and G. Clark, representing Industry; Mr. I. S. McKay and Alderman J. Gray, representing Commerce; Mr. G. R. Foreman, representing Shipping; Mr. R. Stanley, representing Labour; County Councillor J. S. Goodwin, Councillor C. J. Tremewan, Alderman J. A. Hutchison, and County Councillor J. W. Airey, representing Local Authorities; Mr. L. M. Sayers, and Mr. B. T. Pratt, representing the British Transport Commission.

Additional Members

Alderman E. E. Brennan, and Mrs. C. J. Chicken.

Secretary

Mr. E. Dalton.

Mr. A. W. Duffie has been appointed editor of *Keeping Track*, the monthly employee magazine of the Canadian National Railways, and Mr. G. Lavigne has been appointed editor of *Au Fil du Rail*, the French version of the magazine.

The United Steel Companies Limited have announced the following management changes: Mr. A. Jollie, Director & General Manager, Steel, Peech & Tozer Limited, is resigning from these positions on July 31, and Mr. T. S. Kilpatrick, at present Director & General Manager, Workington Iron & Steel Company, has been appointed to the vacant positions. Mr. T. B. Adkins, General Manager, Ore Mining Branch, The United Steel Companies Limited, has retired, and is succeeded by Mr. D. R. Ward Jones, previously Assistant General Manager, Ore Mining Branch. Lt.-Colonel P. F. Benton Jones, Managing Director (Mining & Carbonisation), has relinquished the position of General Manager, United Coke & Chemicals Co. Ltd., and is replaced by Mr. A. L. Curtis, Operations Manager of that company.

Mr. R. L. Oddie has been appointed a Director of the Brush Electrical Engineering Co. Ltd. Mr. F. H. Wood, A.M.I.Mech.E., M.I.Loco.E., has been appointed Executive Director of the Company.

Mr. Hollis Conner has been appointed Sales Manager, International Division, Hyster Company, Peoria, Illinois, U.S.A. Mr. Conner will be responsible for the administration of all phases of the International Division's sales efforts, including advertising and sales promotion, and for co-ordinating the work of the sales departments of all foriegn subsidiaries.

Mr. A. Bolton has been appointed Chairman, National Council of Passenger Vehicle Operators' Association, and Mr. W. Dodds has been appointed Vice-Chairman.

Mr. J. F. E. d'A. Willis has been appointed Chairman, Hall-Thermotank & Co. Ltd., in the place of Mr. Iain M. Stewart who has resigned. Mr. Stewart remains a Director of the company and Chairman of Thermotank Limited, its subsidiary. Mr. J. C. Akester has resigned from the Board of Hall-Thermotank & Co. Ltd., but retains the Chairmanship of its subsidiaries, Vent-Axia Limited, and Axia Fans Limited.

Colonel Andrew Reive has been appointed Chief Executive Officer, Shipping & Forwarding Group, Thos. Cook & Son Ltd. He succeeds Mr. L. G. Stockwell, who has retired.

Mr. J. J. Gracie, a Director of the General Electric Company, and General Manager of its Witton engineering works, is retiring.

Mr. T. H. Kelsey has been appointed Deputy General Manager, Witton Engineering Works, General Electric Co. Ltd.

Mr. F. H. Layton has been elected a Director, W. H. S. Transport Limited, and appointed General Manager to that Company.

Mr. B. Hollingworth has been appointed Assistant Sales Manager (Mining), British Insulated Callender's Cables Limited, in succession to Mr. J. A. Rodgers, who is now Divisional Sales Manager (Accessories).

Mr. R. G. Mills has been appointed Chairman, London & Westminster Investment Trust, in place of Lt.-Col. P. M. Brooke-Hitching, who, as recorded in our June 17 issue, has retired.

Mr. S. A. A. Knott has resigned his position as a Director, Charles Roberts & Co. Ltd., and of its subsidiaries.

Mr. C. K. Wilmers and Marques de Foronda have resigned from the Board of Barcelona Traction, Light & Power Company.

Mr. F. Webster and Mr. C. G. Maynard have been appointed Directors, Engineering & Lighting Equipment Company.

Turner & Newall Limited have announced the following changes in the boards of certain subsidiary companies: Mr. N. A. Morling, member of the parent board, Chairman, Turner Bros. Asbestos Co. Ltd., J. W. Roberts Limited, and Glass Fabrics Limited, has been appointed to the board of Ferodo Limited. Mr. G. S. Sutcliffe, member of the parent board, Chairman of Ferodo Limited, has been appointed to the boards of Turner Bros. Asbestos Co. Ltd., J. W. Roberts Ltd., and Glass Fabrics Limited.

Mr. T. C. Bailey, Sales Manager, Industrial Fuels, Shell-Mex and B.P. Limited, is retiring on June 30, and he will be succeeded by Mr. E. Rendall, Divisional Manager, North Eastern Division, Leeds. Mr. A. G. Simon, Sales Manager, Irish Shell Limited, is appointed Divisional Manager, North Eastern Division.

Sir Christopher Chancellor has been appointed Chairman of the *Daily Herald* (1929). He succeeds Mr. W. Surrey Dane who was Chairman for over ten years.

Mr. G. R. Shottom, Managing Director, Shottom Bros. Ltd. has been elected President of the Institute of British Foundrymen for the year 1960-61.

Sir Henry Wilson Smith is now Chairman, Powell Duffryn Limited.

Mr. J. L. Dickinson has been elected to the Board of the Skefko Ball Bearing Company. He will continue as Secretary.

We regret to record the death of Mr. Francis Zámor, late Director of Ganz & Co.

Mr. S. E. Dominey has been appointed a Director, Northey Rotary Compressors Limited.

Mr. T. H. Cook has been appointed Chief Applications Engineer, The Morgan Crucible Co. Ltd.

Mr. R. C. Hale has been appointed a Director & Commercial Manager of W. & T. Avery Limited.

Mr. J. Wiseley, Commercial Manager, Crompton Parkinson (Chelmsford) Limited, has retired.

Mr. A. M. Champion has been appointed Manager, Vehicle Engine Sales Branch, F. Perkins Limited.

Mr. Lionel Harper, Managing Director, Dowty Hydraulic Units Ltd., has been appointed a Director of Coventry Precision Ltd., also a subsidiary of Dowty Group.

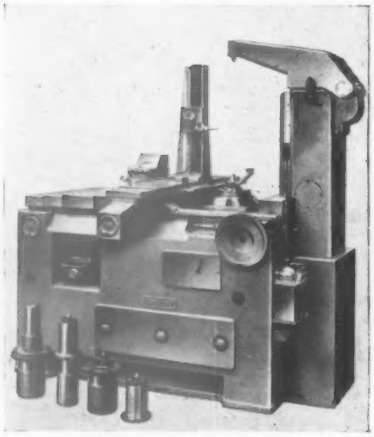
Mr. W. S. Cliffe, Manager, Machinery Department (Southern Area), Thos. W. Ward Limited, is retiring.

Mr. J. D. Eccles has been appointed General Manager, Head Wrightson Steel Foundries Limited.

Mr. W. W. Dolton has been re-elected President of the British Non-Ferrous Metals Federation for the ensuing year. Mr. Michael Clapham, Mr. C. H. M. Holden and Mr. W. F. Slater have been re-elected Vice-Presidents. Mr. H. F. Sherborne has been elected a Vice-President, and Mr. W. F. Brazener has been elected Treasurer in place of Mr. A. L. Johnson, who has retired.

Sir William Stanier has been re-elected President of the Production Engineering Research Association. Sir Basil R. G. Tangye has been re-elected Chairman of Council. Mr. A. L. Stuchbery, Metal Box Company, has been re-elected Vice-Chairman of Council; Mr. G. R. Pryor, Chairman & Managing Director, Edward Pryor & Sons, Ltd., has also been re-elected a Vice-Chairman of Council. Two new elections to Council are Mr. G. F. Shrigley, Group Director of Production of Humber, Limited, and Mr. R. H. S. Turner, a Director of Associated Electrical Industries Limited, Manchester.

NEW EQUIPMENT AND PROCESSES



Measuring Machine

THE Orcutt Mark VI individual base circle involute measuring machine is designed to accommodate the type of gear used in the traction field—i.e., slab gears up to 48 in. outside dia. and stem pinions up to 30 in. outside dia. and 36 in. long.

The machine is floor-standing and rigidly constructed. All main slides are protected by telescopic guards and handwheels are recessed into the body. The centre support column is telescopic so that long guides can be used for maximum distance between centres—36 in.—though this distance can in certain cases be increased to 60 in.

The lower centre is located in a ball cage mounting, a feature allowing easy withdrawal and replacement of centres or arbors while maintaining maximum concentricity. Pressure-indicating devices are built into the compound slide and upper centre so that successive gears can be checked under the same conditions of pressure between base circle and straight edge and between centres.

A modified Talymin gauge, amplifier and rectilinear recorder is built into the machine. Features of this equipment are a side-acting gauge head with a measuring pressure of 1/5 oz.; a base-mounted amplifier incorporating the power pack, and a recorder providing electrical marking of Teledotus paper, and a built-in gearbox giving magnifications of x1, x2, x4, along the line of contact.

Further details can be obtained from the manufacturer, the Gear Grinding Co. Ltd., Shirley, Solihull, Warwickshire.

Electronic Dividing Engine

THE Sperry/Orcutt Dividing Engine is claimed not only to eliminate the element of human error but also to allow angular movements to be controlled to a much higher order of accuracy than has previously been possible. The platen can be positioned angularly to an accuracy of ± 2 sec. or better, and positions can be repeated to an accuracy of $\pm \frac{1}{4}$ sec.

It can be controlled manually by an operator using dial settings or automatically from punched tape. It can be used for inspection purposes or located on machine tools where accurate automatic indexing is required. Special-purpose machines can be built round the engine to enable a variety of operations to be performed automatically.

The 31-in. dia. platen will carry loads up to 1,500 lb. Positional control is obtained from information coded on standard teleprinter paper tape or from a set of dials mounted on the control console. Positional accuracy is the same for both methods of control. Accuracy is not materially affected by changes in temperature or by normal fluctuations in mains supply.

Three models are available: a dividing engine only for use on standard machines; a complete special-purpose machine fully programme-controlled with vertical or horizontal boring heads; a fully-automatic gear-tooth pitch-checking instrument.

Further details can be obtained from the Gear Grinding Co. Ltd., Shirley, Solihull, Warwickshire.

Portable Blast Cleaner

THE Educt-o-Matic is a completely self-contained portable blast-cleaning unit, no bigger than a small hand vacuum cleaner, which weighs only 7 lb. and contains its own vacuum pick-up and dust extraction unit. The only connection required is an airline, $\frac{3}{4}$ in. internal dia., supplying 33 to 60 cu. ft. per min. at a pressure of 90-100 lb. per sq. in. There are no electrical connections.

The cleaner is a highly specialised tool for use in areas where open blasting cannot be done. It can be used in welding shops for cleaning welds or for cleaning before welding; in areas where dust would be a nuisance; in highly mechanised factories, and in areas that are difficult of access.

It is small enough to fit through tank manholes and ideal on small jobs that can be cleaned without dismantling. The blast head can be swivelled for use at any angle.

In plant maintenance, it can be used for cleaning a few square feet of a coating that has failed inside a tank and for preparing the surface for fresh coating. A full charge of 4 lb. of abrasive will normally blast for 15 to 40 min. according to skill of operator, though little skill is required for maximum efficiency.

The standard rubber boot attachment can be used for cleaning flat or large-diameter surfaces, welds, floors, and ceilings. Alternative attachments are available for cleaning the edges of plates and shapes and the insides of 90-deg. angles.

Further details can be obtained from the manufacturer, Hodge Clemco Limited, Victor Engineering Works, New Road, Rainham, Essex.

Vending Machine Service

A NEW service contract is offered by the Vendo Division of Joseph Sankey & Sons Ltd.

A new scale of charges for servicing after expiry of warranty;

A new service (preventive maintenance) contract scheme;

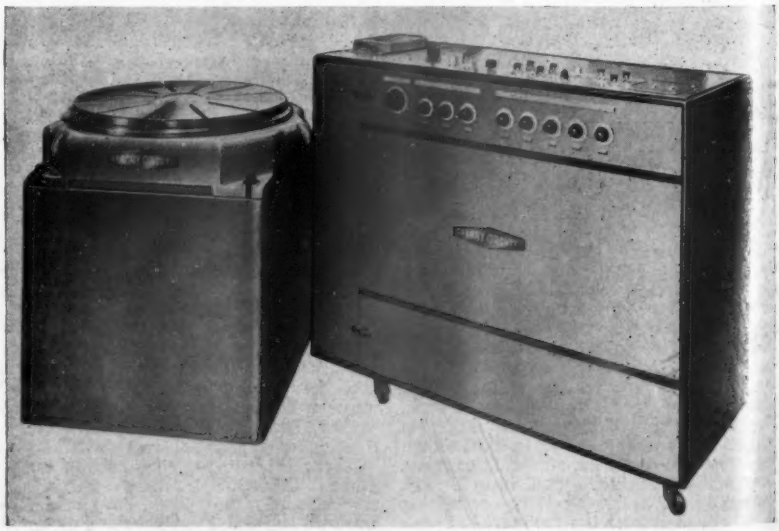
A new flat rate for delivery of machines on loan or transfer, and

The supply of machines and spare parts from stores throughout Britain.

Area office-showrooms are being set up in London, Manchester, and Glasgow, and sales and service staff is being increased.

Quarterly service inspections will be carried out for an exclusive annual charge of £12.

Further details can be obtained from the Vendo Division of Joseph Sankey & Sons Ltd., Hadley Castle Works, Wellington, Shropshire.



Harlow Town Station, Eastern Region

First new station to be built on British Railways for a new town

Speaking at a ceremony on July 13 at Harlow Town Station, Mr. H. C. Johnson, O.B.E., General Manager of the Eastern Region of British Railways, said that the occasion was the first on which a railway General Manager had opened a new station at a new town.

Many stations on British Railways had been built long ago and did not meet the requirements of either railwaymen or travelling public. The Eastern Region hoped that Harlow Town would please its customers—something that the Region was very anxious to do. It would do everything that the railwaymen wanted.

In building the station, one of the aims had been to match the outlines of the Essex countryside. Much hard work and planning had been involved: traffic had been kept going during the work, and all credit must be given to Mr. H. W. Few, the Region's Traffic Manager, and to his officers as well as to all engineers and contractors responsible.

Normal Half-hourly Service

On November 21 a half-hourly service would be introduced from Harlow Town to Bishops Stortford. During peak periods, this service would be increased to six trains an hour, and there would be an additional train from London to Harlow Town each morning and back to London each evening to encourage London businessmen to the area.

Although the accent would be on passenger business, the Region also wanted to develop the freight side. Harlow had been selected as a great concentration depot: it was not yet fully developed, but this would come, for it could give excellent service to all parts of the country.

In their professional capacities, British railwaymen wanted to get on with modernisation all over the country and in their various ways. They thought modernisation was sound national policy: it was not so much the question as to whether the country could afford to have railways, as whether it could afford not to have them. All the modernisation so far carried out—and Mr. Johnson spoke particularly of passenger and electric services—had not only proved successful, but a very sound economic proposition. He quoted part of an advertisement which had appeared that morning in *The Times*:—

"... the modernisation of British Railways has given British manufacturers valuable practical experience in the most up-to-date forms of traction and is assisting them to obtain export orders in the face of international competition."

Triple 50-ft. Lift Towers

The most striking features of the station are its triple 50-ft. lift towers, glass-walled booking hall, 300-yd. long platforms, and waiting-room on an enclosed bridge spanning the tracks.

A short access road leads directly off the town's ring road. The two platforms are reached from the concourse by stairways to and from the overbridge, on which are situated public and staff amenities.

The buildings are heated by hot-water pipes embedded in the floor surfaces and lighting has been designed to enhance the station's appearance both by day and by night.

A transistorised clock—the first to be used in the Eastern Region—controls 11 other "slave" timepieces. It is accurate to within half a second a week.

Passenger areas are kept free from parcels traffic, which is conveyed between platforms by the three lifts.

The following were present at the opening ceremony:—

Harlow Development Corporation

Messrs. L. E. Norton, J. P. Brown (Members); Messrs. B. Hyde Harvey, General Manager; O. W. Gilmour, Chief Engineer; V. Hamnett, Executive Architect; L. E. White, Liaison Officer; L. Austin-Crowe, Commercial Estates Officer (Officers).

Civic and Other Dignitaries

Councillor J. H. Harris, Chairman, Harlow U.D.C.; Messrs. D. F. Bull, Clerk of the Council, Harlow U.D.C.; A. W. R. Webb, Engineer & Surveyor, Harlow U.D.C.; A. W. Medd, Treasurer, Harlow U.D.C.; Superintendent F. J. Pettengell, Essex County Constabulary; the Reverend D. M. Knight, Rector, Town Centre Parish; Mr. R. Kerr, Head Postmaster.

Transport Users' Consultative Committee

Councillor Mrs. L. E. Davidson; Councillor R. W. Dallas; Councillor L. J. Atkins; Councillor D. H. Clayton; Messrs. A. Hitchon; J. Ozanne; F. D. Rose; H. Gates; R. Murrell; S. H. Smith; H. Moore; W. Knight; A. Diggins.

Commerce and Industry

Messrs. A. E. Connell, Key Glassworks Limited; S. C. Clay and F. J. Clay, Clay & Son Limited; J. Spencer, Co-operative Wholesale Society Limited; N. Woods, Revertex Limited; F. R. Bass, Windolite Limited; F. H. Wood, Standard Telephones & Cables Limited; S. G. White, Finmar Limited; G. Newman and H. Bolton, Cyclax Limited; F. Bott, Cossor Radar & Electronics Limited; E. Clayman, H. A. Clayman Limited; L. A. Wood, Greaves & Thomas Limited; R. F. Fellowes, F. W. Woolworth & Co. Limited; H. F. Maton, Harlow Metal Co. Limited; D. M. Groom, Finlay & Co. Limited; F. Carrick and C. E. Bouttell, W. H. Smith & Son Limited; A. S. Parmenter, British Automatic Co. Limited.

Contractors

Messrs. A. S. West, Holmpress Piles Limited; F. H. Burnell, W. & C. French Limited.

Eastern Region, British Railways

Messrs. J. Bonham-Carter, Assistant General Manager; H. R. Gomersall, Regional Planning Officer.

Messrs. J. R. Dallmeyer, Assistant Civil Engineer; H. H. Powell, Architect; S. W. Saunders, Assistant; R. L. Brydon, Senior Resident Engineer; J. R. Bicknell, G. Norris, and P. A. Hamilton, Architect's Section; A. I. Emerson, District Engineer; R. Brooks, Permanent Way Inspector; C. H. Simpkins, Chief Works Inspector, all of Chief Civil Engineer's Department.

Mr. J. P. Hippisley, Plant & Road Vehicle Engineer, Chief Mechanical & Electrical Engineer's Department.

Messrs. R. A. Green, Signal Engineer; J. C. Rowell, District Signal Officer; Signal Engineer's Department.

Mr. O. R. Smart, Supplies & Contracts Manager.

Mr. L. A. A. Taylor, Estate & Rating Surveyor.

Messrs. M. B. Thomas, Public Relations & Publicity Officer; L. James, Chief of Police; W. G. Thorpe, Line Traffic Manager, (Great Eastern); D. A. Farrell, Public Relations Officer (Great Eastern).

Messrs. H. W. Few, Traffic Manager H. Kinsey, District Commercial Officer; R. Hardy, District Running & Maintenance Engineer.

Mr. H. C. Johnson, General Manager, Eastern Region, British Railways, unveiling a plaque in the main hall of Harlow Town Station on July 13

Ministry of Transport Accident Report

East Ham, November 12, 1959: British Railways, Eastern Region

Brigadier C. A. Langley, Chief Inspecting Officer of Railways, Ministry of Transport, inquired into the collision, at 12.47 p.m., on November 12, 1959, between two passenger trains at East Ham on the London, Tilbury & Southend line, British Railways, Eastern Region. The 12 noon passenger train from Fenchurch Street to Shoeburyness, while standing in East Ham Station, was struck in the rear by the 12.25 p.m. passenger train from Fenchurch Street to Shoeburyness. The 10th and 11th coaches of the first train were telescoped into each other. Twelve passengers were injured, and the guard of the second train suffered from shock and bruises.

Ambulances and police were called and arrived promptly. Because of a misunderstanding the Fire Brigade was not called until 1.18 p.m., but arrived at 1.20 p.m. Both up and down through lines were blocked but were cleared by 4.20 p.m. and re-opened to traffic at 4.50 p.m.

Fog had been of variable density throughout the morning. At the time of the accident visibility was about 20 yd.

The first train comprised 11 non-corridor passenger coaches and a bogie parcels van at the rear. The second train had eight similar coaches. Both trains were hauled by tank engines with left-hand drive. The engine of the second train was travelling tender first, and so the controls were on the right hand side in the direction of travel.

Position of Signals

The diagram shows the position of the relevant signals. They are upper quadrant semaphores, and where visibility is restricted the stop signals are repeated by illuminated banner repeaters.

The Sykes lock-and-block system is used, but some of the treadles have been replaced by track circuits. In particular:

(1) The East Ham No. 2 signalman cannot accept a train from Upton Park and so release the Upton Park starting signal unless his outer distant, inner distant, and outer home signal levers and arms are normal and track circuits D and E are clear.

(2) The Upton Park signalman cannot accept a train from Plaistow unless his distant and home signal levers and arms are normal and T.C.1039 is clear. Also he cannot pull his home signal lever unless his starter is at "danger." Again he cannot accept a second train until the first has passed him and his signals restored to danger behind it.

(3) When track circuits D and E were installed in May, 1959, the treadles removed included one in the down main platform which when depressed sounded an annunciator in East Ham No. 2 box, and so told the signalman that the trains had arrived in the platform.

The line is equipped with the Hudd Automatic Warning System (A.W.S.) of train control.

Evidence of Drivers

The driver of the first train said that after a slow journey due to poor visibility and adverse signals, he found the Upton Park distant at caution and the home was only cleared as he came up to it. He was held at the starter for about 7 or 8 min. On proceeding he found the East Ham outer home "off," but the banner repeater of the inner home was "on." He crawled forward whistling into the station, and came to a stand at the inner home which was "on."

The driver of the second train said that at Upton Park the fog was so dense that he could hardly see the signals until he was "right on top of them." On approaching Upton Park distant he received and cancelled an A.W.S. caution warning. On entering Upton Park Station at slow speed he received another A.W.S. warning (for the East Ham outer distant). The Upton Park home signal cleared just as he was about to stop, so he "kept his engine crawling." The distant was at caution and the banner repeater for the Upton Park starter was "on." He approached the starter at about 15 m.p.h., and received another A.W.S. caution warning, this time for the East Ham inner distant. As the engine was travelling tender first he had been looking out for signals on the fireman's side, but on receiving the A.W.S. warning he crossed over to cancel it. He returned to the left hand side to look for the Upton Park starter, but he lost it in the fog. He turned to his fireman and said "I think I have lost it. We have got to find the home." By this he meant the East Ham outer home. He continued forward at the same speed because he did not think there would be anything standing at that signal. On reaching it, he found it "off" and took it as applying to his train. Then he saw the banner for the inner home showing "on" and started to apply the brake, but in a matter of seconds his engine collided with the train ahead. He saw neither this train nor its tail lamp.

He explained that as his fireman was a new mate who did not know the route, he decided not to stop when he missed the Upton Park starter, because his fireman would not know where to look for the signal, but he agreed that he should have stopped.

He said that his engine was in excellent condition with no steam leaks, and the brakes and A.W.S. equipment working well. He had been working 8-hr. shifts for many days and had not had a rest day for a long time, but he was not feeling tired at the time of the accident. He gave his evidence in a straightforward manner and frankly admitted his serious mistake.

The fireman and guard of this train in the main confirmed the driver's evidence, but the guard did not look out for any signals.

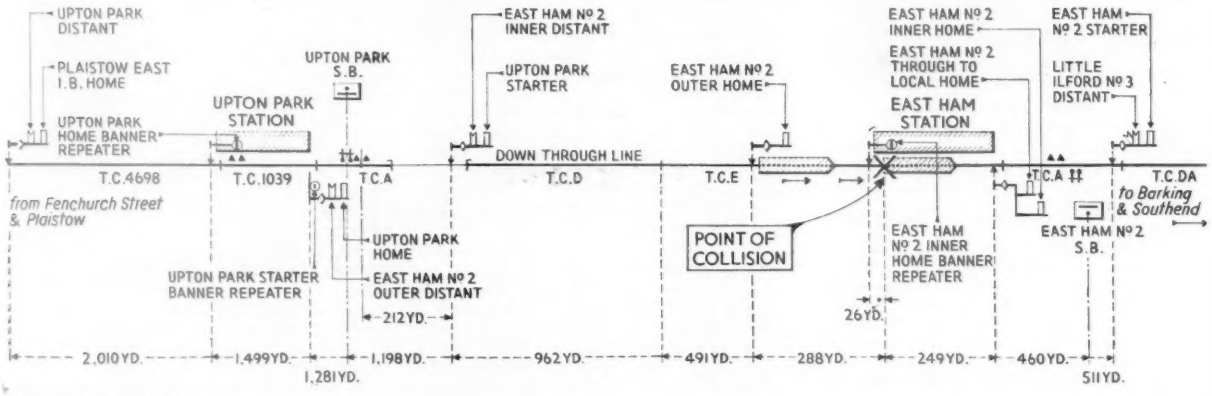


Diagram showing circumstances of accident at East Ham, British Railways, Eastern Region, on November 12, 1959

Weather Conditions

The Upton Park signalman said that the fog was bad all the morning. He described how after checking it at his home he dropped the first train down to his starter, to await acceptance from East Ham. It stopped with the rear coach opposite his box. He could see it quite clearly, and observed its tail lamp when it left after he had obtained "line clear." On giving "out of section" he was immediately offered and accepted the second train. This again he allowed to proceed to his starter after checking it at his home. At that time the starter was locked at danger, because he had not yet received "out of section" for the first train. He could not have been given another "line clear"; nor did he ask for one.

The second train passed his box very slowly, and he saw the tail lamp disappear in the fog. This did not surprise him as it was only an eight-coach train. Shortly afterwards the East Ham signalman asked if he had a train standing at his starter. On being told that the 12.25 p.m., the second, train was there, the East Ham signalman replied that D track was occupied. The Upton Park signalman said the train had probably run by in the fog, and that he would try and find out. He could see nothing, and was then told by East Ham that D track

had cleared, so he thought the train must have set back, but almost immediately he received "obstruction danger" from East Ham, and realised that there had been a collision.

Regarding working instructions, the Upton Park signalman said that at the time of the accident Rule 39(*b*) operated in such a way that a train could be dropped down to the starter during fog or falling snow to await acceptance into the section ahead. This was because the signal was repeated in the box and the Sykes working exempted the driver from carrying out Rule 55. On the day after the accident, however, the signal box instructions were amended to prohibit this working in fog or falling snow, with the result that trains had to be held at the home signal until the starting signal was cleared.

There were three signalmen on duty at East Ham No. 2 box, one being a learner. The man dealing with down trains agreed about the acceptance of the first (12 noon) train. On receiving "train entering section" he cleared his outer home. He knew, however, that in the fog the train would be moving very slowly, and as the annunciator had been removed, he had no means of telling when the train had arrived in the platform. Track circuit E was of no help owing to its great length.

He therefore left the outer home "off" until he could know that the train had arrived, and for the same reason did not pull his inner home.

He realised that the first train had been a long time in the section. He had seen track circuit D clear behind this train, and then he saw it once more show "occupied." He agreed with the Upton Park signalman's evidence on further developments.

The other two East Ham signalmen broadly concurred with their colleague's evidence.

Evidence was given establishing the integrity of the signalling equipment. As regards the driver of the second train, evidence was given that in the past six months he had had 27 free days made up of 13 Sundays, two days in lieu of Bank and Public Holidays and 12 days annual leave. Excluding this last, he had had approximately one day off each fortnight. Because of the impending electrification of the London Tilbury & Southend line and the possibility of redundancy, it had been difficult to recruit staff, and the men at the depot had volunteered to work on their rest days.

Inspecting Officer's Conclusions

Brigadier Langley holds that none of the signalmen concerned was responsible for the accident. He is satisfied that the Upton Park starting signal was at danger when the second train passed it. Furthermore, under the rules and instructions then in force, the Upton Park signalman was allowed to send trains forward to his starter, even in foggy weather.

The East Ham signalmen were working under more difficult conditions. This was the first time that they had had to work in fog since the removal of the annunciator which, as explained above, indicated the arrival of trains in the platform. Track circuit E is so long that its occupation does not indicate the position of trains in relation to the outer and inner home signals. Therefore the outer home signal has to be kept "off" until the signalman is sure that the train has arrived in the platform; and in fog this cannot be seen from the box.

If might have been better if the track circuits D and E had been watched more closely on the diagram. If so, the re-occupation of track D (by the second train) might have been seen in time for the outer home signal to have been restored to danger in front of the second train. Nevertheless, the signalmen are not held responsible for the accident.

Brigadier Langley is satisfied that the driver of the second train missed the Upton Park starter, because he was not keeping a proper look-out. The "on" position of the starter's banner repeater and the receipt of the A.W.S. warning for the East Ham inner distant (under the starter) should have both warned the driver that the starter was probably "on" and also told him of its location. His view of the starter was partially obscured by the masts for the overhead electrification equipment which had recently been erected, but Brigadier Langley believes that after receiving the A.W.S. warning the driver did not cross the footplate to look out on the left-hand side until he had passed the signal. He thus missed it in the fog. Instead of stopping he went on without reducing speed. His explanation that his fireman was a new mate who did not know the road, is inadequate, and he must be held solely responsible for the accident.

The automatic warning system of train control, Brigadier Langley says, is a most valuable safeguard, which functioned correctly on this occasion, but it does not relieve drivers of their responsibility for the observance of signals. The accident would not have happened if the train had been held at the Upton Park home signal instead of being allowed up to the starter. Having missed the starter, the driver was in a quandary. If he had stopped and sent his fireman to look for the signal, the train would have been seriously delayed. If he went on, unless with the utmost caution, he was endangering the safety of his passengers, and of those in any train ahead, as the accident indeed showed.

Parallel with Previous Accident

There is a close parallel between this accident and the one at Dagenham East on January 30, 1958. On that occasion, Brigadier Langley recalls, he recommended that during fog or falling snow, a signalman should not be allowed to send a train forward to a stop signal to await acceptance ahead unless the signal either was a colour light or was fitted with co-acting detonators, the explosion of which was indicated in the box. This recommendation was accepted by the British Transport Commission, and its effect and the consequent practical difficulties were examined by all the Regions, but owing to the important and complicated nature of the problem it was only on July 8, 1959, that the Commission instructed the Regional General Managers to go ahead with the revision of the instructions in those signalboxes where the prohibition could suitably be applied. At Upton Park the new instruction did not reach the signalman until the day after the accident.

Similar restrictions are now in force in 5,522 boxes, or 82 per cent of those where this restriction might be applied. The Commission is to substitute, where practicable, colour-light signals for semaphore starters, as they become due for renewal, this in addition to their general colour-light signalling programme, which embraces the London, Tilbury and Southend line. This will help drivers, but even when the programme is completed, there will still be a large number of semaphore signals on main lines. Brigadier Langley therefore recommends that this problem of operating in fog or falling snow should be examined again, to see if his proposed safeguards cannot be extended even further. Any consequent additional delay to traffic in fog should be set against the gain in safety.

Brigadier Langley comments on the removal of the East Ham annunciator. This has now been restored as a temporary measure pending the replacement of the semaphore signals by colour lights. He calls attention to the difficulties arising from long track circuits, and suggests that where necessary they should be split into separate berth and clearance track circuits, and thus give signalmen a better indication of the position of trains which are out of his sight.

Brigadier Langley does not think that the number of days the driver was working contributed to his lack of vigilance on this occasion. It is, however, desirable for enginemen to be given regular and adequate days off duty, and he hopes that the staffing difficulties will be overcome so as fully to achieve this object.

U.I.C. Board of Management

The 54th session of the Board of Management of the International Union of Railways (U.I.C.) was held in Paris last month. The chair was taken by Dr. H. M. Oeftering, Chairman of the Directorate of the German Federal Railway and Chairman of the International Union of Railways, supported by Monsieur J. Tuja, Secretary General.

The Board approved the text of the 99-year contract between the U.I.C., the French National Railways and the French Government, as to the lease of the ground and the occupation of the building in Paris. The foundation stone will be laid on September 20 next, the day after the next session of the Board of Management.

Work of the Committees

The Board approved the work carried out by the Eighth Committee (Legal Questions) and approved its conclusion. The work had consisted mainly of amending the liability clauses contained in U.I.C. Leaflets No. 471, "Regulations concerning the operating of lines crossing frontiers," and No. 621, "Use of multiple-unit trains in international service."

It also agreed to the procedure worked out by the Fourth Committee (Operating) at its Stuttgart meeting for implementing the suggestions contained in the introductory report on the future of passenger traffic, which had been drawn up by a working party under the chairmanship of Monsieur Mermier (S.N.C.F.).

Discussions took place on the problems raised by the modernisation of the international forwarding of goods. The Fourth Committee Working Party studying this subject is to continue its work on forming an international network of through goods trains in close liaison with the Chairman of the European Goods Train Timetable Conference (L.I.M.) and the Chairman of the Fourth Committee. The latter is to try to convene a meeting of heads of the operating departments of the several railway administrations to obtain their opinion on the Working Party proposals before their submission to the Board at its session on September 19.

The Board approved the respective proposals of the Chairmen of the Fourth, Fifth (Motive Power & Rolling Stock), and Seventh (Way & Works) Committees for their programmes of work.

Reorganisation of Activities

In accordance with the decisions taken at the meeting in March, precise proposals on additional measures for reorganising the work of the U.I.C. were presented to the Board in a report by the Secretary General based on the previous studies and conclusions.

The main proposals of the report were as follows: the number of committees would remain unchanged but they would function

in a more flexible manner; meetings of heads of departments would be inaugurated; there would be some changes in the operations of the Office for Research & Experiments (O.R.E.); the Information Centre of the European Railways (C.I.C.E.) would be reorganised and become the "European Railway Information & Publicity Centre" with the initials C.I.P.C.E.; the International Documentation Bureau (B.D.C.) would be reorganised; and an "International Bureau of Railway Films" (B.F.C.) would be set up.

The Board approved all the proposals submitted after making some amendments and clarifying certain points. The regulations to implement these will be drawn up by the General Secretariat and submitted to the Board for approval at the September meeting.

Complete Standardisation Abandoned

The Chairman of the O.R.E. Control Committee obtained agreement for its proposal to abandon complete standardisation for the time being but, in co-operation with industry, to pursue the standardisation of locomotive components and parts in order to attain as great a degree of uniformity and interchangeability as the different technical ideas allowed.

In addition the Board of Management discussed various miscellaneous matters, including the economic problems raised by the present situation of the majority of railways, the visit to Europe of delegates from the Association of American Railroads, and the dates of international meetings in 1961.

Tour of European Railways by A.A.R. Officers

A delegation from the Association of American Railroads recently visited railway headquarters and installations on the Continent and in the U.K. The leader was Mr. C. D. Buford, Vice-President (Operations & Maintenance Department) of the Association. The other members were: Mr. P. V. Garin, Manager, Research & Development, Southern Pacific Company; Mr. J. W. Horine, Electrical Engineer, Pennsylvania Railroad; Mr. W. M. Keller, Vice-President (Research), A.A.R.; Mr. F. R. Woolford, Chief Engineer, Western Pacific Railroad; Mr. L. B. Yarbrough, Superintendent, Signals & Communications, Wabash Railroad; Mr. S. G. Guins, Engineer, Chesapeake & Ohio Railway (interpreter).

After a tour of the U.S.S.R. Railways they arrived in Paris on July 1 for a tour of railways in Western Europe organised jointly by the International Union of Railways, (U.I.C.), the French National, Swiss Federal, German Federal, Belgian National, and Netherlands Railways, and the British Transport Commission.

Visit to U.I.C. Headquarters

Before the tour they inspected the U.I.C. headquarters in Paris, when Monsieur Jean Tuja, Secretary - General, described the functions and organisation of the U.I.C., and expressed the hope that exchange of documentation between the A.A.R. and the U.I.C. would be developed. M. Tuja later entertained the delegation to dinner, when senior officers of the S.N.C.F. were present.

Engineering Work in Western Region

The party arrived in Britain *via* the Hook and Harwich on July 17. Their tour of British Railways included a visit to the British Railways Western Region Civil Engineering Laboratory on July 18. There they saw research on the stability of long-welded rails, methods of installing track in prefabricated lengths, and the repair of tunnels by grouting.

On July 18 they were entertained to luncheon at Paddington by Mr. J. R. Hammond, General Manager of the Western Region. The guests included Mr. K. W. C. Grand and Mr. J. Ratter, members of the B.T.C., and senior officers of the Region.

Later that day they visited a display of models, diagrams, and photographic illustrations at the Great Western Royal Hotel, Paddington, arranged under the direction of Mr. M. G. R. Smith, Chief Civil Engineer, Western Region. This featured developments in civil engineering research and other work in the Region. It included apparatus for measuring movements in three dimensions in long-welded rails, the Alkathene tube method of slip plane location, pointing guns for quicksetting mortar, the Boyer Schwarz single-line track-layer, the marshalling yard at Margam, and the proposed plant at Taunton for hopper-discharge of coal.

A.A.R. delegation in the U.I.C. headquarters in Paris. Mr. C. D. Buford is third and Mr. J. Tuja fourth from left

They were shown diesel hydraulic locomotives under construction and maintenance at Swindon Works on July 19.

On July 20 the party inspected the B.T.C. chemical laboratories at Muswell Hill.

Later they met Sir Brian Robertson, Chairman of the British Transport Commission.

They sailed from Southampton on July 20 by s.s. *Queen Elizabeth*.

Questions in Parliament

Railway Embargoes on Goods Traffic

Mr. David Webster (Weston-Super-Mare—C.) asked the Minister of Transport on July 13 to give a general direction to the B.T.C. not to put embargoes on goods traffic without first consulting his department.

Mr. John Hay, Parliamentary Secretary: No. This is a matter of management which is the responsibility of the Commission, and I do not consider that a general direction would be justified.

Mr. Webster: I accept that the Commission is under a legal obligation to provide passenger services, but it would be disadvantageous if it refused to carry traffic which would be to the greatest advantage to the railway services.

Mr. Hay: Yes, but the Commission naturally wishes to carry as much freight and as many passengers as it possibly can. I think that in the case to which my hon. friend refers there were special circumstances connected with a shortage of labour in a certain area, and that required imposition of this temporary embargo.

Parliamentary Notes

Commons Motion on Channel Tunnel

Over 60 M.Ps. covering all parties declared their view that a Channel Tunnel could be financed by private capital in the absence of the wish by any Government to participate. This view is expressed in a motion tabled in the House of Commons of which notice was given on July 11 for discussion at "an early date."

Its sponsors are Messrs. Teeling (Pavilion, Brighton—C.), E. L. Mallalieau (Brigg—Lab.), Frederick Bennett (Torquay—C.), H. Hynd (Accrington—Lab.), Geoffrey Wilson (Truro—C.), and L. J. Callaghan (Cardiff S.E. Lab.).

Importance of Branch Lines

In the course of a two-day debate in the House of Commons on July 12 and 13, on Scottish industry, several Members referred to railway services.

Mr. A. C. Manuel (Ayrshire—Lab.) said that far too little thought had been given before decisions to close branch lines in the Highlands had been taken. If they were to have tourism in the Highlands, they must have these branch lines. Closure of a branch line might mean the destruction of the very link that could sway the introduction of light industry to an area in which there was unemployment.

Improvement on Scottish Railways

Mr. J. A. Stodart (Edinburgh West—U.) said that he noticed in the Report on Industry & Employment in Scotland that while goods receipts on the Scottish railway system were down, passenger receipts were up, even though the number of passenger journeys was down. On many routes passenger traffic had risen "sensationally," particularly on cross-country routes where dieselisation had taken place. Here, he

believed, that the tide was now on the turn.

The effect of modernisation in Scotland had been the "absolute and complete punctuality on the railway," explained Mr. Stodart. The second was the cleanliness. The third was the splendid spirit among the men at all levels. He had been particularly impressed with the young firemen, who were "obviously longing to become drivers of these magnificent new locomotives."

Mr. Stodart thought that the Scottish Region of British Railways was being well run. There could be no Region in which morale at all levels was better and in which the spirit of keenness burned more brightly. The only thing that he would like to see was rolling stock labelled "Scottish Railways" instead of "British Railways." Future emphasis must be on punctuality.

No Fair Share of Railway Work

Mr. Forbes Hendry (Aberdeenshire W.—U.) stressed that British Railways tended to centralise its workshops in the South of England. It was right that British Railways should modernise their lines, but he wished they would turn to their workshops to see how they could help Scotland there. Scotland was not getting a fair share of British Railway work.

Tunnel Plan "Under Close Study"

Lord Rea in the House of Lords on July 23 asked H.M. Government if it had been able to give preliminary consideration to the comprehensive report of the Channel Tunnel Study Group.

Lord Chesham, Joint Parliamentary Secretary, Ministry of Transport, replied that the Government was making a close study of the report of the Channel Tunnel Study Group. One important consideration involved was the Governmental guarantees. The Government would reach a conclusion as soon as possible.

Lord Merrivale thought that the Study Group had approached the French Cabinet on this matter and that the French Government was waiting to hear from the British Government. Could not approaches be made to the French Government, because possibly each side was waiting for the other to make the first move?

Lord Chesham: I do not answer for the French Government, and I do not think I can add anything to what I have said until the close study I mentioned has been completed.

Lord Rea: May we take it that the attitude of H.M. Government is at least not unfavourable to the report as presented?

Lord Chesham: I do not think that I can add anything to what I have said.

Staff and Labour Matters

Strike of Power Station Workers

The strike of London Transport power station workers which began on Sunday, July 10, was still continuing at the time of going to press. Workers at Greenwich voted on Monday afternoon, July 18, to return to work and this meant the strike was confined to Lots Road (Chelsea) and Neasden power stations.

The men at Greenwich have agreed to accept payment of a special allowance of 10s. a week for dirty work conditions which was part of a formula agreed in negotiations between London Transport and the union representatives.

Lots Road workers have refused to return to work unless they are paid time-and-a-half on Saturdays, double time on Sundays and retention of their present shift allowance.

Meanwhile, London Transport, with the aid of supervisory and technical staff, has managed to confine the cut in Underground services to 30 per cent of the normal service, and with the resumption of work at Greenwich it is expected that an improvement in services will be possible.

Seamen's Strike

An unofficial strike of seamen for more pay, which began on Merseyside and spread to steamer services to the Western Isles of Scotland and to Northern Ireland, showed signs of a break on Monday, July 18, when men at Holyhead decided by a large majority on the Sunday to return to work. As a result, the British Railways Holyhead/Dun Laoghaire services began to operate on the Monday morning.

The strike caused serious interference with holidaymakers and shortage of foodstuffs in the Western Isles resulted.

On Monday night, July 18, a meeting of strikers at Liverpool voted to stay out until a newly-formed national strike committee has had time to complete the drafting of conditions governing a return to work and to submit them to the National Union of Seamen.

Contracts and Tenders

Contracts for modernisation work on British Railways

British Railways, North Eastern Region, has placed the following contracts:—

Derek Crough Limited: diversion of the River Team in connection with construction of the new marshalling yard at Lamesley

Quibell & Son Ltd.: alterations to site for a lift and staircases well at Hull Paragon

Etchells, Congdon & Muir Limited: provision and installation of 15-passenger lift at Hull Paragon

Butterley Co. Ltd.: supply and delivery of steelwork for reconstruction of Bridge No. 39 at Beeston

Sorrell (York) Limited: building work in connection with new passenger lift in Regional Headquarters, York

Edmundsons Construction Co. Ltd.: installation of electric lighting, heating and power supply at Crofton Permanent Way Depot

T. E. Cundy Limited: painting of Darlington Bank Top and Northallerton and certain other passenger stations.

Paterson Engineering Co. Ltd.: 4,000-gal. water treatment plant, Gateshead Motive Power Depot.

Henry Pels & Co. Ltd.: high-speed shearing and nibbling machine for the research and development unit at Stooperdale, Darlington

Quibel & Son Ltd.: stripping of reinforced concrete piles and excavation and construction of pile caps in new office building at Hull Paragon

F. Shepherd & Son Ltd.: extension of the north end traverser track foundation at York Carriage Works

Wellerman Bros. Ltd.: supplying, pitching, driving and extracting steel sheet piling in reconstruction of Bridge No. 16 at Beningbrough.

E. Davis (Fixers) Limited: removal of the shed roof at Springhead Motive Power Depot, Hull

W. Irwin & Co. Ltd.: construction of signalbox at Sudforth Lane, Kellingley

Holmpress Piles Limited: piled foundations for the district offices, Leeds City Station

Arundel (Contractors) Limited: painting of Hammerton Street Diesel Depot, Bradford and Adolphus Street (Bradford) Goods Station

Consolidated Pneumatic Tool Co. Ltd.: mechanical equipment for new marshalling yards has been placed.

British Railways, Scottish Region has placed the following contracts:

Charles Ritchie & Co. Ltd.: heating of staff accommodation and maintenance pit extensions, Leith Central diesel depot

Costain Concrete Co. Ltd.: pre-cast concrete beams for new underbridge, Kilwinning by-pass road

P. Graham & Son: construction of signalbox, Stanley Junction near Perth.

James Miller & Partners Ltd.: reconstruction of overbridge No. 60 and removal of overbridge No. 1, Castle Douglas

Sturrock Power Installations Limited: electric lighting installation, goods shed and yard buildings, Sighthill new goods depot, Glasgow

Standard Telephones & Cables Limited: train indicator equipment, Queen Street Low Level, Glasgow.

British Railways, Eastern Region, has placed the following contracts:—

Holliday & Greenwood Limited: alterations to parcels, ticket and enquiry offices, alterations to staircases to up and down platforms, repairs and redecorations to brick arches and provision of external pavings to front forecourt and canopy at Chelmsford Station

Caffin & Co. Ltd.: construction of crane track at Canning Town Wharf, and construction of crane track and renewal of river wall at Blackwall (Pepper Warehouse) Wharf

Charles R. Price: earthworks, stores buildings, foundations to messroom and external works at Doncaster Decoy new permanent way depot

Cementation Co. Ltd.: construction of concrete underbridge No. 1001E and steel dive-under bridge No. 1001D and earthworks within the confines of the bridges east of Colchester Station.

British Railways, London Midland Region, has placed the following contracts:

Leonard Fairclough Limited: shed offices and amenities at freight terminal, Watford

Wilscaf Limited: painting and repairs to roof of Manchester Central Station

Richards Structural Steel Co. Ltd.: fabrication and delivery of steelwork for Bridge No. 23, on Roade–Rugby (new) line

Ashwell & Nesbit Limited: hot water services and ventilation at Motive Power, Chester West

B.K.S. Air Survey Limited: aerial survey of Bletchley.

The Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Greece:

263 *tonnes* of structural steel for railway bridges.

The issuing authority is the State Procurements Service, 50, Socrates Street, 4th Floor, Athens. Material should be from St. 37 quality of steel complying with specifications in force on the German Railways, or material of corresponding quality of the country of origin. The tender No. is 454. The closing date is July 30. The Board of Trade reference is ESB/18447/60.

From Malaya:

110-ton wagon. Tenders are invited on behalf of the Central Electricity Board of the Federation of Malaya, for the supply of a special 110-ton railway wagon for the Cameron Highlands Scheme. A short précis describing the type of wagon and contractual requirements may be had on application to Messrs. Preece, Cardew & Rider, 8, 10 and 12, Queen Anne's Gate, London, S.W.1. Tender documents, returnable by August 29, 1960, may be obtained from the same address upon application.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

Notes and News

Cheap Day Return Fares in North Eastern Region.—British Railways, North Eastern Region, have announced that on August 1 cheap day return fares will be introduced between Earswick, Stamford Bridge, and Filey via Market Weighton and Driffield. On the same day a cheap day return fare will be introduced between Selby and Harrogate via York or Leeds.

North Eastern Region Traffic Increase.—British Railways North Eastern Region, states that during the first six months of 1960, the 24 weeks ended June 19, it carried 26,829,300 tons of goods which originated within the Region, an increase of 2,342,900 tons (9.57 per cent) over the same period last year. General merchandise traffic rose by 374,700 tons to 2,848,100 tons (an increase of 15.15 per cent) and coal and coke traffic by 1,064,400 tons to 19,047,800 tons (5.92 per cent). Other minerals traffic also showed an increase at 4,929,000 tons—a rise of 906,000 tons (22.52 per cent). Total receipts for all freight traffic were £23,263,000, an overall increase of £1,142,000 (5.16 per cent). Passenger receipts were also up by £233,000 to £4,444,000, an increase of 5.53 per cent.

Holyhead-Dun Laoghaire Service Resumed.—The British Railways Holyhead-Dun Laoghaire mailboat services were resumed on July 18, after lengthy negotiations with the strikers on the previous day.

Light Engines in Collision near Darlington.—Five railwaymen were taken to hospital when the train conveying them to carry out civil engineering work on the main Darlington to Durham line North Eastern Region, British Railways, was in collision with two coupled light engines on Sunday. Three of the men were allowed to leave hospital after treatment but two were detained.

London Transport Trolleybus Conversion.—Four trolleybus routes have been changed over to operation by Routemaster diesel buses in the seventh stage of the L.T.E. 14-stage trolleybus conversion scheme. The routes affected are—611, 626, 628 and 630. Work is now to be begun on the conversion of Highgate garage to diesel bus operation, and the closing for bus operation of the 50-year-old depot at Hammersmith.

London-Based Type "2" Diesel Locomotives Transferred to Scotland.—During April, the first few of the 20 Type "2" Birmingham–Sulzer–Crompton diesel-electric locomotives at present working on the Great Northern Line of the Eastern Region, British Railways, were transferred to the Scottish Region. This move is part of the British Railways policy of rationalising the variety of diesel locomotives at its depots, the 20 locomotives going to augment other units of same design already in Scotland. They were originally allocated to the Eastern Region, but in view of the ultimate intention to concentrate all locomotives of this type and make in the Scottish Region, they are being replaced by other Type "2" locomotives. These 20 locomotives, Nos. D.5300–19, powered by the Sulzer 6LDA28 diesel engine of 1,160 b.h.p., have been operating suburban services from and to Kings Cross. Their duties have included the "Cambridge Buffet Express" trains and shorter-distance local trains on the main line to Hitchin and on the Hertford branch during the period they have been in the London area, (based originally at Hornsey Motive Power Depot, and latterly at the new Finsbury Park Diesel Locomotive Maintenance Depot).

Further Electrification in Belgium.—Extension of electrification of the Belgian National Railways is reported to have been decided from Erquelines, near the French frontier on the main line from Paris, to Charleroi, and from Liège to the German frontier at Hergenrath, near Aachen. The voltages are not stated. Conversion beyond Liège presumably will be at 3,000 V. d.c. as for the S.N.C.B. lines already electrified. Electrification from Erquelines to Charleroi might be at 25 kV., 50 cycles, to link up with the French National Railways electrified lines.

Improvement Scheme for Queen Alexandra Dock, Cardiff.—A £165,000 improvement scheme for the north side of Queen Alexandra Dock, Cardiff, has been announced by British Transport Docks. Improvements will include the re-surfacing, flush to rail level, of some 2,000 ft. of quayside, the electrification of the capstan system, the re-laying of the permanent way, the surfacing of a large open area to provide accommodation for cars for export and other traffic, and the erection of a 50 ft. floodlighting tower.

Chaseside Engineering Co. Ltd.—Chaseside Engineering Co. Ltd., have announced that from August 1, all service matters relating to Lancashire and Yorkshire will be dealt with from the following address: Chaseside Engineering Co. Ltd., Service Division, Philips Road, Blackburn, Lancs. Phone: Blackburn 4065. The Ware Service Depot will still be maintained, and in addition to its present activities will also cover the service & spares requirements of Norfolk, Suffolk, Hampshire, Dorset, Wiltshire, Somerset and Bristol.

Day Excursions to Paris and Brussels.—British Railways, North Eastern Region, have recently introduced day excursions from selected stations in the Region to Paris and Brussels. These excursions are available on Mondays, Tuesdays, and Wednesdays until September 7, 1960. Although passports will be required by passengers to Brussels, an attractive feature of the trip to Paris is that excursionists require only a special "Identity Card" issued free by British Railways. Bookings must be made 14 days in advance, and three passport photographs should be submitted for affixing to the "Identity Card."

Dorman Long (Steel) Limited Expansion.—Dorman Long (Steel) Limited, which last year completed its £60,000,000 post-war development programme, has announced plans for further improving efficiency and increasing iron and steelmaking capacity. The Iron & Steel Board has approved proposals by the company to install a sixth 360-ton tilting open-hearth furnace and a third 600-ton mixer at its Lackenby steel plant. Facilities will be provided for the full application of tonnage oxygen steelmaking techniques to all open-hearth furnaces at Lackenby. Approval has also been given to the building at the Clay Lane blastfurnace plant, Cleveland Works, of a third 27 ft. 6 in. hearth blast furnace of 1,500 tons aday capacity.

Reconstruction of Barking Station, L.T.S. Line

Barking Station, on the Tilbury Line of the Eastern Region, British Railways, in course of reconstruction. New station buildings are being erected on concrete supports at the level of the overline road bridge

The total estimated capital expenditure is £6,819,000. Work on these developments will begin immediately and member companies of the Dorman Long group will be responsible for construction. It is anticipated the new units will be in operation by the end of 1961.

Improved Autumn Tilbury-Gravesend Car Ferry Service.—From October 1, a 20-min. interval service will be provided during peak periods on the Tilbury-Gravesend car ferry, operated by British Railways, Eastern Region.

Scottish Paint Manufacturers' Change of Address.—The Scottish Association of Paint Manufacturers has announced a change of address. Communications should now be addressed to Scottish Association of Paint Manufacturers, 128, Hope Street, Glasgow, C.2. Phone: Central 6434-5.

Tangyes Limited.—Tangyes Limited have announced a group net loss for 1959 of £28,019 (£73,201), increasing debit forward to £73,620. Current assets are £638,324 (£697,517) and liabilities £318,917 (£364,067), overdraft £25,516 (£41,590). During the first half of 1960 orders and production have been appreciably higher than in 1959.

Joseph Sankey & Sons Ltd.—Subsequent to general expansion within the Vendo Division of this Company, the Sales Department will be moving from Hadley Castle Works, Wellington. Shropshire, to London. After July 18, all correspondence and enquiries, other than on delivery, servicing or technical matters, should be addressed to: Sales Manager, Vendo Division, Joseph Sankey & Sons Ltd., 168, Regent Street, London, W.1. Phone: Regent 3261.

Stone-Platt Industries Limited at Factory Equipment Exhibition.—An exhibit by Stone-Platt Industries Limited at the International Factory Equipment Exhibition to be held at Belle Vue, Manchester, on September 21-October 1, will include an oil-fired forced-circulation Stone-Vapor boiler made under licence of the Vapor International Corporation of U.S.A. Although originally designed for train-heating, this type of boiler has been installed in many industrial applications where advantage can be gained from its small size, light weight, and smoke-free combustion. Steam is raised in two min. from a cold start and thereafter only when required.

Dunlop Rubber Co. Ltd. Industrial Belting Laboratories.—An organisation has been set up by the belting division of the Dunlop Rubber Co. Ltd., to enable full advantage to be taken of new materials and processes for transmission, conveyer, and other types of belting, to reinforce production control, and to ensure that specifications are closely maintained during manufacture. It is based on a recently completed industrial laboratory and is centred at the factory at Speke, near Liverpool. A joint committee meets regularly to discuss projects and to initiate new research. Any worthwhile result is immediately made available to all Dunlop belting factories throughout the world.

Turner & Newall Limited. The Directors of Turner & Newall Limited propose to capitalise sufficient reserves to permit an issue of one new Ordinary Stock unit of £1 for each such unit now in issue. It is hoped that it will be possible to recommend the payment of a final dividend for the year of an amount which, with the interim dividend of 5 per cent already announced, will be equivalent to a total distribution of 22½ per cent for the year on the Issued Ordinary Capital as at present existing. This is equal to 11¼ per cent per annum (against 10 per cent last year) on the proposed new total Issued Ordinary Capital. Notices of an Extraordinary General Meeting, required to approve the proposal to capitalise reserves and to increase the Authorised Capital of the Company, will be issued to the Ordinary Stockholders.

F'AG Bearing Co. Ltd.—With the opening of a new branch office in Swansea, following close upon the recent opening of a branch in Leeds, F'AG Bearing Co. Ltd. now have 10 branch offices operating in Great Britain. The branches serve all the major centres of industry through their stock rooms. F'AG Bearings are manufactured by Kugelfischer Georg Schafer & Co. of Schweinfurt, West Germany, and also at Stratford, Ontario, Canada.

Nyasaland Railways.—Mr. W. M. Codrington, Chairman & Managing Director, Nyasaland Railways, reports in his annual statement that the group operating profit for 1959 was £388,804 (£486,521), and the ordinary 6 per cent. Fixed assets totalled £7,503,924 (£7,334,784), current assets £1,225,708 (£1,279,467) and liabilities £473,156 (£499,621). Estimated results of the first few months of this year show some improvement over last year, and the dividend is to remain at 6 per cent.

The Sheffield Twist Drill & Steel Co. Ltd.—Mr. Alexander Dormer, Chairman and Joint Managing Director of The Sheffield Twist Drill & Steel Co. Ltd., states that the revival in trade has continued, and that the net profit of the Group before taxation for the year 1959 was £517,078, an increase of £79,999 compared with the previous year. Working hours have decreased from 44 to 42 hours per week, and further economies may have to be made as a result. Exports in 1959 showed an increase of 8 per cent on those of 1958, and with a further increase made during the first four months of 1960.

W. H. Dorman & Co. Ltd.—In a circulated statement Mr. Darby Haddon, Chairman, W. H. Dorman & Co. Ltd., states that, after charging depreciation of £57,093 against £34,910 last year, the consolidated net profit before taxation is £160,483 against £54,230, and that the amount available for appropriation this year is £81,692 against £37,549. The Fixed Assets Replacement Reserve is being closed by a transfer partly to a new Tax Equalisation Account and partly by a transfer to General Reserve which, with a transfer of £30,000 from the current year's profit, will stand at £250,000. The Directors propose to pay a final dividend of 2d. per share. There is an increasing demand for the company's products which has overtaken manufacturing capacity in some departments.

Forestal Land, Timber & Railways.—Sir Gerard d'Erlanger, Chairman, The Forestal Land, Timber & Railways Company, states that it is not the present intention of the board of the company to raise fresh capital to finance the diversification programme. This is a long-term policy, for which no vast sums will be needed in any one year.

Wood Preservation, New Company Formed.—A new company, Preservation Developments Limited, has been formed to handle the wood-preservation interests of the Standardised Disinfectants Co. Ltd. Products include Brunophen R60, a new woodworm killer which has a mild but pleasant odour making it suitable for eradication work in occupied premises. The address is 23, Sloane Street, London, S.W.1.

H. J. Baldwin & Co. Ltd. Display at British Railways Electrification Conference Exhibition.—At the forthcoming Exhibition connected with the British Railways Electrification Conference, 1960, H. J. Baldwin & Co. Ltd. will be displaying a representative selection of cable troughs, standard fittings and special purpose units, with a small layout illustrating their application in practice. Technical data on the manufacturing processes and on the products themselves will be provided.

London Transport Pannier Tank Locomotives.—London Transport Executive has acquired another Western Region 0-6-0 pannier tank locomotive to replace the 63-year-old 0-6-0 saddle tank L.53 built by Peckett & Sons Ltd. in 1897 for the Metropolitan Railway. The additional W.R. engine is of the 5700 class and was numbered 5764 in the British Railways fleet. It will be renumbered L.95, and is the sixth locomotive of its type to be transferred from the Western Region to London Transport.

Edgar Allen & Co. Ltd.—Edgar Allen & Co. Ltd. have announced that group capital employed at April 2, 1960, was £4,532,290 (£4,354,653), including net current assets of £2,378,525 (£2,181,320). Book value of equity was £3,945,118 (£3,823,966), per £1 capital, 45s. (44s.). The net profit was £271,043 (£244,773) and the dividend 12½ per

The "Midland Pullman" at Speed

The up "Midland Pullman", L.M. Region, near Luton, passing the Skefko Ball Bearing Co. Ltd. works where axleboxes for the train were made

cent. Commitments were £64,164 (£48,871). Sales turnover was slightly below that of 1958-59. Recent legislation will almost certainly occasion a substantial additional capital expenditure within the next three or four years.

Smethwick Drop Forgings Limited.—Mr. R. Bennett, Chairman of Smethwick Drop Forgings Limited, stated recently that production was at a maximum. Net profits for the year to March 31, 1960, were £283,723 (£201,086) and the dividend remains at 1s. per 5s. share. Fixed assets are £1,448,439 (£1,347,063).

Railway Benevolent Institution.—At a meeting on July 18 the Board of the Railway Benevolent Institution granted annuities to four widows and one member involving an additional liability of £112 per annum; 113 gratuities were also granted amounting to £1,120 to meet cases of immediate necessity. Grants made from the Casualty Fund during June amounted to £1,308.

Consett Iron Co. Ltd.—Lord Ridley, Chairman, Consett Iron Co. Ltd., states that orders are remaining on a high level. The company is installing a new steel plant in which the L.D. and Kaldo processes will be used. For the past year the net income after taxation, interest charges and other expenses, and adjustments, is £1,729,534. A final dividend of 5¼ per cent is recommended.

The Maidstone & District Motor Services Ltd.—Mr. R. P. Beddow, Chairman, Maidstone & District Motor Services Ltd., states that financial results for the past year have not been unsatisfactory despite increasing use of private transport, the inadequate road system, and the effects of dieselisation and electrification on the railways. He emphasises the need for a modification of speed restrictions outside built-up areas.

Beeston Boiler Co. Ltd.—The directors of Beeston Boiler Co. Ltd. recommend a two point increase in the final ordinary dividend, bringing it up to 16 per cent. This makes a total of 20 per cent for the year ended March 31, compared with 17½ per cent previously. Net profits worked out at £132,460 against £150,768, after charging tax of £119,330 (£138,149) and depreciation of £18,097 (£18,308). Nothing is placed to capital reserve nor tax equalisation reserve, against £40,000 and £22,500 respectively. Carry forward is raised to £214,715 from £159,617.

Cowans, Sheldon & Co. Ltd. Results.—The net profit of Cowans, Sheldon & Co. Ltd. for the year ended April 6, 1960, was £44,595 compared with £59,201 for the preceding 12 months, and the dividend is 15 per cent (against 17½ per cent). Total net assets are £622,849 (£612,036) including net current assets £365,578 (£400,532). Commitments amount to £45,000 (£50,000). The Chairman, Sir John Kennedy, says that it is difficult to forecast with any accuracy future market trend. There has been a slight improvement in last few months and all departments are now on full time.

Model Locomotive Exhibition at Bournemouth.—An exhibition of scale models of British Railways locomotives was opened at Bournemouth West Station, British Railways, Southern Region, last Wednesday by the Mayor of Bournemouth, Councillor Mrs. B. Bicknall, and is open daily from 9 a.m. to 9 p.m. until August 6. It has been arranged jointly by the Bournemouth West Station Committee of the Southern Railwaymen's Home for Children, Woking, the Bournemouth Model Railway Society, and the Bournemouth Model Engineering Society. The proceeds are to be given to the Home for Children. Working models include an 800-h.p. B.T.H. Type "1" diesel-electric, a 2,500-h.p. electric, and a Class "9" 2-10-0 locomotive. Among other exhibits are a "Duchess" class 4-6-2 engine, Pullman cars of the "Queen of Scots" and a "Terrier" 0-6-0 tank engine of the former L.B.S.C.R.

Request for Re-opening of White City Station, L.T.E.—Local authorities are stated to support representations by the British Broadcasting Corporation for re-opening of White City Station, on the Metropolitan Line of London Transport. The station serves the B.B.C. television studios.

C. C. Wakefield & Co. Ltd.—C. C. Wakefield & Co. Ltd. is to be known as Castrol Limited from August 12. During the post war years, the name Castrol has acquired the greater significance, and to simplify the work and the identity of the Group as a whole the decision has been taken to change the name of the company, subject to the formal approval of the Board of Trade.

Ruston & Hornsby Limited.—The group net profit of Ruston & Hornsby Limited, rose from £577,875 to £625,708 for the year to March 31, 1960. The dividend on the £6.15m. Ordinary is increased from 8 per cent to 9 per cent. Trading profit was lower at £1,366,811, against £1,500,633, but profit on contracts completed in earlier years and investment income both increased, while the tax charge was reduced.

S. Smith & Sons (England) Ltd.—The board of S. Smith & Sons (England) Ltd. announces the formation of a new division to integrate its business in industrial products, which have hitherto been made or marketed by Smiths Industrial Instruments Limited, Kelvin & Hughes (Industrial) Limited, and David Harcourt Limited. The assets and undertakings of these three companies will be transferred to S. Smith & Sons (England) Ltd., with effect from July 31. The undertaking so transferred, together with the appropriate manufacturing activities of S. Smith & Sons (England) Ltd., will then be formally established as the Industrial Division of S. Smith & Sons (England) Ltd., with the trading style "Smiths Industrial Division." The General Manager of the new division will be Mr. W. M. Cann, to whom reference is made in our personal columns.

OFFICIAL NOTICES

REQUIRED for the Central Railway of Peru. Assistant Engineer (civil). Capable of designing steel bridge work, simple reinforced concrete structures and alterations to existing steel structures, of field work in connection with new projects and supervision of construction. Must be Chartered Civil or Structural Engineer with at least five years' experience in position of responsibility covering both design office and field work. Railway experience and knowledge of Spanish advantageous but not essential. Age 30-40, preferably single. Salary offered, £1,550/£1,650, according to experience. Apply in writing to:—Peruvian Transport Purchasing Company Limited, Suffolk House, 5, Laurence Pountney Hill, Cannon Street, London, E.C.4.

INDIAN RAILWAYS

GLOBAL PROCUREMENT PROGRAMME FOR ROLLING STOCK
No. G.P. 23 of 1959-60.

THE Ministry of Railways (Railway Board), Government of India, propose to obtain from established and reliable manufacturers.

40 Nos. Broad Gauge Diesel Locomotives—2,600 h.p.

Tender documents are obtainable from the Office of the Director General, India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, on payment of £2 0s. 6d. per set. Other I.R.S. drawings and specifications can be had on additional payment from the Research Design & Standards Organisation, Simla-2.

Offers should reach the Director, Railway Stores, Railway Board, State Entry Road, New Delhi-2, not later than 12 noon on August 24, 1960

Railway Stock Market

There has been considerable uncertainty in stock markets with share values moving lower, though selling has not been heavy. Investors have taken the international events calmly, but there is little disposition for buying interest to revive. The Prime Minister's address to industrialists has drawn widespread attention to the need to expand exports. It followed the increase in the trade gap to £99,000,000 for the past month, the largest monthly "gap" since January, 1957. June is normally not a good month for British trade, but it is clear that exports will have to expand if the value of the £ is to be maintained.

There were few movements of importance among foreign rails, but Costa Rica ordinary stock continued to attract some attention, and the quotation was marked up from 38½ a week ago to 41, while the first debentures rose from 90 to 92½ and the second debentures from 110 to 111½.

Antofagasta stocks, however, were less firm, the ordinary easing from 13¾ to 13½, but the preference kept at 31¾ and the perpetual debentures at 49. United of Havana second income stock was again quoted at 6.

Sao Paulo Railway 3s. units eased from 1s. 3d. to 1s. 1½d. Paraguay Central prior debentures were 17½, and Chilean Northern debentures came back from 58½ to 57½. Mexican Central bearer debentures were again 59½. International of Central America kept at $23, but the preferred was quoted at $109, compared with $111 a week ago. Guayaquil & Quito assented bonds were 70½.

West of India Portuguese capital stock again changed hands around 111 and Barsi Light Railway stock kept at 18.

Canadian Pacifics eased from $43½ to $43⅛. The preference stock was fractionally lower at 55½, but the 4 per cent debentures strengthened to 61. While Pass shares eased from $11¼ to $11.

Midland of Western Australia ordinary stock was 6½, with the first debentures again 70½ and the income debentures 27½.

Nyasaland Railways shares eased from 10s. to 9s. 6d.; the 3½ per cent debentures came back from 48½ to 45½.

Among the shares of locomotive and engineering companies, a feature has been a rise in Birmingham Wagon, which at 39s. 3d. compared with 37s. 4½d. a week ago, but Wagon Repairs 5s. shares lost part of their recent good rise, and at 13s. 6d. compared with 14s. a week ago. Beyer Peacock 5s. shares, however, have strengthened from 6s. 9d. to 7s. 1½d. Gloucester Wagon 10s. shares kept at 13s. 4½d. and G.D. Peters were quoted at 16s. 3d. North British Locomotive eased from 8s. 6d. to 8s. 3d. Westinghouse Brake at 46s. 3d. were unchanged.

Buyers were still about for Ransome & Markes 5s. shares, which rose further on balance from 26s. 7½d. to 27s. 9d. Pollard Bearing 4s. shares eased from 42s. 6d. to 42s. Pressed Steel 5s. shares have been maintained at 30s. 3d., but Dowty Group 10s. shares came back to 35s. 9d.

Associated Electrical eased from 51s. 10½d. to 50s. 10½d., awaiting the outcome of the take-over battle for the Telephone Manufacturing Co. English Electric were little changed at 38s. 3d., and in advance of the dividend announcement, General Electric were 35s. 1½d.

British Oxygen at 99s. 6d., held all but a small part of their recent rise. David United shares advanced further from 134s. 3d. to 140s., but there was a reaction in Vickers from 33s. 6d. to 32s. 3d., and Metal Industries eased from 66s. 3d. to 65s. with the prevailing market trend. Ruston & Hornsby were maintained at 28s. 3d. following the raising of the dividend from 8 per cent to 9 per cent.